

US Department of the Interior
National Park Service
National Center for Preservation Technology
and Training
Publication Number 2002-08

Teacher's Guide to **LEAD PAINT and HISTORIC BUILDINGS**

This course instructor's guide was prepared by:
Jeff Gordon, UIUC Building Research Council
Dennis Livingston, Community Resources
Carol J. Dyson, Illinois Historic Preservation
Agency

Produced by the
Illinois Historic Preservation Agency

With funding provided by the
National Park Service
**National Center for Preservation
Technology and Training**

This Teacher's Guide accompanies the
**Lead Paint and Historic Buildings
Training Manual**



Teacher's Guide to Lead Paint and Historic Buildings

This course instructor's guide was prepared by
Dennis Livingston, Community Resources
Jeff Gordon, UIUC Building Research Council
Carol Dyson, Illinois Historic Preservation Agency
Mike Jackson, FAIA, Illinois Historic Preservation Agency

Illustrations

Dennis Livingston

Graphic Design and Layout

Selah D. Peterson, UIUC School of Architecture

Photography

Illinois Historic Preservation Agency

Produced by

Illinois Historic Preservation Agency

Project Director

Carol Dyson

With Funding provided by the

National Park Service

National Center for Preservation Technology and Training

© 2000 Illinois Historic Preservation Agency, Springfield

This Teacher's Guide accompanies the

Lead Paint and Historic Buildings Training Manual

Teacher's Guide to Lead Paint in Historic Buildings

© 2000, the Illinois Historic Preservation Agency, Springfield, Illinois.
All rights reserved. No part of this publication may be reproduced in
any manner without the written permission of the Illinois Historic
Preservation Agency.

This Teacher's Guide is designed to accompany the Lead Paint and
Historic Buildings Training Manual © which was produced by the
Illinois Historic Preservation Agency and authored by
Dennis Livingston, Community Resources
Jeff Gordon, UIUC Building Research Council
Carol Dyson, Illinois Historic Preservation Agency and Mike Jackson,
Illinois Historic Preservation Agency
(Copyright: 2000, by Illinois Historic Preservation Agency, Springfield,
Illinois.)

The workshops, Training Manual and Teacher's Guide for the course: Lead
Paint and Historic Buildings were developed under a grant from the
National Park Service and the National Center for Preservation
Technology and Training. Its contents are solely the responsibility of the
authors and instructors, and opinions do not necessarily reflect the official
position or policies of the Department of the Interior nor the Illinois
Historic Preservation Agency, nor does the mention of trade names or
commercial products constitute endorsement or recommendation by the
Department of the Interior, The National Center for Preservation
Technology and Training nor the Illinois Historic Preservation Agency.
Under Title VI of the Civil Rights Act of 1964, Section 504 of the
Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, as
amended, the U.S. Department of the Interior prohibits discrimination on
the basis of race, color, national origin, disability or age in its federally
assisted programs. If you believe you have been discriminated against in
any program, activity, or facility as described above, or if you desire further
information, please write to:

Office for Equal Opportunity
National Park Service
1849 C. Street, N. W.
Washington, D.C. 20240
or
Equal Employment Opportunity Officer
Illinois Historic Preservation Agency
1 Old State Capitol Plaza

Teacher's Guide to Lead Paint in Historic Buildings

Table of Contents

Overview	i
Master Schedule	vii
1. Introduction	1-1
2. Lead, Lead Hazards, and Lead Regulation-A Primer	2-1
3. Causes of Building Deterioration	3-1
4. Evaluating a Building for Lead	4-1
5. Planning for Safe Rehabilitation	5-1
6. Site Setup	6-1
7. Dust Control-Protecting Workers and the Work Site	7-1
8. Treatments	8-1
9. Scheduling	9-1
10. On-going Maintenance	10-1
Appendix-Handouts	A-1

Teacher's Guide to Lead Paint in Historic Buildings

Overview

The material in the Teacher's Guide to the Lead-Based Paint and Historic Buildings Training Course provides guidance for a successful presentation of the course. The guide is organized, along with the Training Manual, in the order of the presentation of the material. The course is designed to be presented over the course of two days.

In the process of preparing the material, the two-day course was presented by the authors to four different classes. The recommendations, exercises, and workstation demonstrations provided in the Teacher's Guide are based on the experience from these trial classes. The exercises contained herein were all developed by Dennis Livingston.

The course material is presented in three formats:

- Class presentation – a classroom lecture format.
- Exercises – an interactive format.
- Workstations – a demonstration format.

The guide explains the formats necessary to teach each chapter of the Training Manual. It also provides the approximate time necessary for each component of the chapter. The times are keyed to a Master Schedule that follows this Overview.

The subject of each class presentation is keyed by page number to the Training Manual. For the most part, subject matter from the Training Manual is not repeated in the Teacher's Guide. However, particularly important information is repeated, and noted in the Teacher's Manual by the terms **Key Issue**, **Key Point**, or **Critical Principle**. These terms serve to emphasize the most essential concepts of lead-safe rehabilitation.

Some of the exercises developed for the course requires handouts. Master handouts are located in the Appendices, and can be copied for any size class. Portions of the handouts can be copied on overhead transparencies to assist the instructor in leading an interactive discussion of the exercise.

Teacher's Guide to Lead Paint in Historic Buildings

Workstations for demonstration of lead-safe rehabilitation techniques are central to the training course. A critical issue in preparing the course will be finding a suitable location that provides for both classroom and demonstration formats.

Location

Because the course is designed for preservation professionals and craftspeople, it is expected that the instructors will have knowledge and access to current or upcoming rehabilitation and restoration projects. This access is invaluable to presenting the course. In the trial courses, two different approaches proved to be successful:

- For the first two classes, two houses built in the mid 19th century and currently being renovated were used. A meeting room within three blocks of the rehabilitation projects was rented for the classroom and exercise components of the course.
- For the second two classes, a larger late 19th century, partially vacant, commercial building was identified as available for setting up workstations. In this case, a room in the commercial building was suitable for the classroom, and workstations were setup in other vacant rooms on the same floor.

These two approaches each have distinct advantages and disadvantages.

When the classroom is setup in a designed meeting space, the organization of the classroom sections are simplified as most of the classroom requirements (tables, chairs, visual systems, etc.) will be available. At the same time, setting up and accessing the demonstration workstations becomes more complicated. Ideally, the classroom will be within walking distance to the workstation sites.

Proximity is the principal advantage to setting up a classroom in the same site as the workstations. It will save the instructors many steps in setting up the course and is more convenient during instruction. In this case, however, the

Teacher's Guide to Lead Paint in Historic Buildings

requirements for successful classroom instruction (tables, chairs, visual systems, etc.) will have to be imported. When considering a job site for setting up a classroom, consider the following factors:

- Good lighting – both during day and night-time
- Sufficient heating/ventilation
- Electrical outlets
- Clean/available restrooms
- Security for equipment at night

Organizing a Successful Training

Training planning – do as far in advance as possible:

- Instructors lodging
- Conference hotel- optional reservation of a block of rooms
- Locations for training – in conference center or at the demonstration site
- Demonstrations – determine location
- Refreshments- catering
- Retaining a trades person to prepare demonstration site and to purchase materials at least 10 days prior to the training

Marketing for the Training:

- Target the audience, and tailor the brochures, advertisements, and training emphasis to their needs.

The following need to be prepared for the training

- Nameplates for tables – dual sided
- Nametags
- Course evaluations
- Trainers evaluation

Teacher's Guide to Lead Paint in Historic Buildings

- Exercises
- Overheads/slides
- Schedule/agenda
- Attendees/instructors lists/addresses/phone/fax/e-mail
- Thank you letters

Classroom Presentation Supplies:

- Table and Chair rental – Besides those for the attendees/instructors you will need tables for:
 - Classroom instructors – 1-2 tables
 - Check-in- 1-2 tables
 - Sequencing Exercise – approximately 2 tables per 10-15 attendees.
 - Refreshments table
- Slide projector, extra bulb
- Overhead projector, extra bulb
- Screen
- Flipchart/easel
- Extension cords
- Three prong plug adapters
- Tape, scissors, staplers, pushpins, pens, masking tape, duct tape
- Extra-wide markers

Workstation Demonstration Supplies (Note: Some items may apply to more than one work station.)

General and Safety Supplies

- High efficiency vacuum setup to be used with power tools
- Rolls of 3mil and 6mil polyethylene sheeting
- Tyvec suits with elastic at ankles and wrists
- Safety glasses
- NIOSH approved respirators N95, N100 disposable, and N100 canister

Window Restoration

- Historic window sash
- Window vinyl jamb liners

Teacher's Guide to Lead Paint in Historic Buildings

- Window sash weights, replacement chains
- Window weather-stripping

Door Restoration

- Carpentry tools (chisels, wood plane, etc.)
- Jig to hold door

Interior Wall Encapsulation

- Glid-Wall or Nu-Wall system (or equal) paint and fiberglass fabric plaster repair system
- Painting supplies (roller, roller pan, brushes, etc.)

Exterior Siding and Wet Scraping

- Spray bottles
- Carbon scrapers
- Sanding sponges
- (optional) Shrouded power paint removal systems (Paint Shaver and/or Paint Blitzer, (or equal) orbital sander) attached to a high efficiency vacuum

Cleaning Equipment

- Buckets/ mops
- 2 four by four sheets of luan painted mat black, then smeared with drywall dust

Adjacent Area/First Aid/Clean up Station

- Table, or two saw horses and boards
- Eyewash kit
- Three buckets
- Pump sprayer
- Soap

Instructor Qualifications

The Lead Paint and Historic Buildings course integrates the knowledge from three related fields:

- Historic Preservation
- Lead-Based Paint Hazard Reduction
- Renovation carpentry/painting

Teacher's Guide to Lead Paint in Historic Buildings

A sound understanding in all three fields are necessary to properly present the material in the training course. Combined with a fourth attribute, training experience, the ideal qualifications for any individual instructor represent a high standard of experience and knowledge.

For this reason, the course can most easily be taught by a team of two or more instructors. (In the trials of the course, up to four instructors were used.) The team approach serves a number of purposes:

- The sum total of instructor qualifications is elevated with the expertise from two or more individuals.
- The time demands on any individual instructor are lessened, allowing for more thorough and fresher presentations.
- During the workstation demonstrations, multiple instructors allow for more than one demonstration to be active simultaneously. This allows the class to be broken up into smaller groups, improving visibility and interaction between the instructors and the class.

With the team concept in mind, an instructor with experience in two of the three fields could contribute significantly to the course presentation when augmented by a team with complimentary experience.

Teacher's Guide to Lead Paint in Historic Buildings

Master Schedule

The following page provides a master schedule for the Lead-Based Paint and Historic Buildings course. The schedule is organized by chapter, and provides approximate time requirements for each presentation and activity. A sample schedule, based on a two-day presentation of the course, is included in the last column.

The master schedule is based on actual times recorded during initial trials of the course. Times for each section varied between trials as a result of student interest and questions. This is to be expected. The times for each activity should be considered guidelines as compared to strict requirements.

At the same time, departures from the overall schedule should not be allowed to become too lengthy. There is a lot of material to cover in the two-day course, and trainers should remain aware of the status of the schedule as the training proceeds. It is helpful to have an assistant monitor the elapsed time during the course to keep the instructor(s) informed. The sample schedule includes substantial time (90 minutes) at the end of the second day for question and answer period. This block of time can provide a buffer for when the course runs long.

The order of the course material follows the chapter order in the manual. Because so much of the material is interrelated, it is impossible to design the chapter order for a perfectly linear presentation. When teaching the course, it is inevitable that questions will arise regarding related material that is scheduled to be covered later in the course. One of the difficulties in presenting the course is the tendency to jump ahead in response to these questions. In order to maintain the schedule order, this tendency should be generally avoided. An appropriate response to this situation (which will occur regularly) could be:

"That is a good question. The one sentence answer to that question is - brief answer. We will cover that issue in more detail this afternoon/tomorrow. Bear with me."

Two full days of training can be rigorous for students. The schedule includes both morning and afternoon breaks (15 minutes) each day, and lunch breaks of just over one hour. There are also activities that take place at workstations outside of the formal classroom that assist in breaking up long periods of classroom presentation.

LEAD PAINT AND HISTORIC BUILDINGS: TEACHER'S GUIDE MASTER SCHEDULE						
CHAPTER NUMBER	CHAPTER TOPIC	ACTIVITY	ACTIVITY DURATION	CHAPTER DURATION	SAMPLE SCHEDULE	
BEGINNING-DAY ONE						
Chapter 1	Introduction	Class Presentation	10-15 min	20-30 min	8:30-8:45	
		Introduction of Students	10-15 min		8:45-9:00	
Chapter 2	Lead Overview	Class Presentation	20-25 min	55-65 min	9:00-9:20	
		Regulatory Review	35-40 min		9:20-10:00	
DAY ONE MORNING BREAK			15 min		10:00-10:15	
Chapter 3	Causes of Deterioration	Exercises 3-A & 3-B Moisture Issues	50-60 min	60-75 min	10:15-11:05	
		Class Presentation	10-15 min		11:05-11:20	
Chapter 4	Evaluating Buildings for Lead	Class Presentation	30-35 min	65-75 min	11:20-11:55	
	DAY ONE LUNCH BREAK		1 hr 5 min		11:55-1:00	
		Exercise 4-A Dust Wipe Sampling	35-40 min		1:00-1:40	
Chapter 5	Planning Lead-Safe Rehab	Exercise 5-A Window Planning	10-15 min	25-35 min	1:40-1:55	
		Class Presentation	15-20 min		1:55-2:10	
Chapter 6	Site Setup	Class Presentation	10-15 min	40-55 min	2:10-2:20	
		Work Station: Dirty Room/Adjacent	15-20 min		2:20-2:35	
	DAY ONE AFTERNOON BREAK		15 min		2:35-2:50	
		Exercise 6-A Site Setup	15-20 min		2:50-3:10	
Chapter 7	Dust Control	Class Presentation	30-40 min	60-80 min	3:10-3:50	
		Exercise 7-A Dust Control and 7B Engineering Controls	30-40 min		3:50-4:30	
END OF DAY ONE/BEGINNING OF DAY TWO						
Chapter 8	Treatments	Class Presentation	20-25 min	About 3 hours	8:30-8:50	
		Work Stations Part 1	1hr 20min		8:50-10:10	
	DAY TWO MORNING BREAK		15 min		10:10-10:25	
		Work Stations Part 2	1hr 20min		10:25-11:45	
DAY TWO LUNCH BREAK			1hr 15min		11:45-1:00	
Chapter 9	Scheduling	Class Presentation	30-35 min	75-90 min	1:00-1:30	
		Exercise 9-A Sequencing	25-30 min		1:30-2:00	
		Exercise 9-B Scheduling	20-25 min		2:00-2:25	
DAY TWO AFTERNOON BREAK			15 min		2:25-2:40	
Chapter 10	On-Going Maintenance	Class Presentation	10-15 min	10-15 min	2:40-2:55	
		Conclusion	Concluding Remarks		5 min	2:55-3:00
			Questions and Answers		As required	3:00-4:30

CHAPTER NUMBER	CHAPTER TOPIC	ACTIVITY	ACTIVITY DURATION	CHAPTER DURATION	SAMPLE SCHEDULE	
BEGINNING-DAY ONE						
Chapter 1	Introduction	Class Presentation	10-15 min	20-30 min	8:30-8:45	
		Introduction of Students	10-15 min		8:45-9:00	
Chapter 2	Lead Overview	Class Presentation	20-25 min	55-65 min	9:00-9:20	
		Regulatory Review	35-40 min		9:20-10:00	
DAY ONE MORNING BREAK			15 min		10:00-10:15	
Chapter 3	Causes of Deterioration	Exercises 3-A & 3-B Moisture Issues	50-60 min	60-75 min	10:15-11:05	
		Class Presentation	10-15 min		11:05-11:20	
Chapter 4	Evaluating Buildings for Lead	Class Presentation	30-35 min	65-75 min	11:20-11:55	
		DAY ONE LUNCH BREAK			1 hr 5 min	11:55-1:00
		Exercise 4-A Dust Wipe Sampling	35-40 min		1:00-1:40	
Chapter 5	Planning Lead-Safe Rehab	Exercise 5-A Window Planning	10-15 min	25-35 min	1:40-1:55	
		Class Presentation	15-20 min		1:55-2:10	
Chapter 6	Site Setup	Class Presentation	10-15 min	40-55 min	2:10-2:20	
		Work Station: Dirty Room/Adjacent	15-20 min		2:20-2:35	
	DAY ONE AFTERNOON BREAK		15 min		2:35-2:50	
	Exercise 6-A Site Setup	15-20 min	2:50-3:10			
Chapter 7	Dust Control	Class Presentation	30-40 min	60-80 min	3:10-3:50	
		Exercise 7-A Dust Control and 7B Engineering Controls	30-40 min		3:50-4:30	
END OF DAY ONE/BEGINNING OF DAY TWO						
Chapter 8	Treatments	Class Presentation	20-25 min	About 3 hours	8:30-8:50	
		Work Stations Part 1	1hr 20min		8:50-10:10	
	DAY TWO MORNING BREAK		15 min		10:10-10:25	
	Work Stations Part 2	1hr 20min	10:25-11:45			
DAY TWO LUNCH BREAK			1hr 15min		11:45-1:00	
Chapter 9	Scheduling	Class Presentation	30-35 min	75-90 min	1:00-1:30	
		Exercise 9-A Sequencing	25-30 min		1:30-2:00	
		Exercise 9-B Scheduling	20-25 min		2:00-2:25	
DAY TWO AFTERNOON BREAK			15 min		2:25-2:40	
Chapter 10	On-Going Maintenance	Class Presentation	10-15 min	10-15 min	2:40-2:55	
		Concluding Remarks	5 min		2:55-3:00	
		Questions and Answers	As required		3:00-4:30	

1 INTRODUCTION

Class Presentation

10 to 15 minutes

The Introduction is the opportunity to present the overall goals and philosophy of the two-day course of instruction. The class presentation should cover the material listed below. Reference is made to the page numbers in the training manual.

The course has been developed to support four principal goals (Page 1-1 to 1-2):

- Preserve and maintain historic buildings.
- Integrate lead safety into preservation work.
- Promote cost-effective treatments.
- Maintain the health of workers, occupants, and the environment.

There are six principles that support these goals (Pages 1-2 to 1-4):

- Historic buildings offer high quality materials and construction techniques unmatched today.
- Long-term maintenance is the preferred approach from historic, economic, health, and environmental perspectives.
- Environmental problems, including lead paint hazards, share causes. Cost-effective solutions require an understanding of the causes by all the project participants, from the professions to the trades.
- The most appropriate people to solve lead paint problems are the people already maintaining, rehabilitating, and restoring buildings. Outside specialists should be used selectively.
- Worker protection is achieved by minimizing exposure.

Teacher's Guide to Lead Paint in Historic Buildings

- Proper cleaning, and using dust wipe sampling to monitor effectiveness, is essential to lead-safe rehabilitation.

Key Issue: (Pages 1-6 to 1-8) The introduction is also the proper place to identify the important distinction between “abatement” and “in-place management” to the class. Both terms have been borrowed from the vocabulary of the lead industry. As that industry has developed, emphasis has shifted from a full abatement to an in-place management approach. In place management serves as a model for performing renovation in a lead-safe manner. The focus of the course is not on creating a lead-free environment. Rather, the focus is on making buildings lead-safe. This approach allows for the maximum retention of historic materials.

Introduction of Students

10 to 15 minutes

At some point during the introductory session of the course, the instructor should ask all members of the class to introduce themselves. As you go around the classroom, each student should provide:

- Name
- Organizational affiliation
- Current experience with lead paint issues
- Reasons for attending, and class expectations

Knowledge of the make-up of the class and the existing level of sophistication in regard to the subject matter will prove invaluable to the instructor.

Note on the Audience

The training manual and course has been prepared for all parties involved in the preservation process. They can be subdivided into two general categories (Pages 1-4 to 1-5):

Teacher's Guide to Lead Paint in Historic Buildings

- People responsible for designing or guiding historic building work – architects, preservation professionals, building owners, consultants, and facility managers.
- People performing the work on historic buildings – contractors, craftspeople, and maintenance workers.

The course material is essentially the same for both groups. Lead-safety is not the province of one group over the other. For lead-safety to be successfully incorporated into the process, it is critical that all parties in a renovation project are informed with the knowledge contained in the course.

Depending on the make-up of the class, however, some parts of the curriculum, particularly from the questions that arise, will likely receive more emphasis than other parts. For instance, designers and building owners may want to discuss the regulatory issues at greater length than will the contractors or craftspeople. On the other hand, contractors may want to spend more time on construction and cleaning techniques. Balancing the curriculum for a specific audience will be a primary challenge for the instructor. During our trial courses we began by targeting the course for each of these two primary audiences. By our third trial we decided it was more productive to teach the course more broadly.

Our experience was that the two groups of participants learned a lot from each other, sometimes to their own surprise. We found that the comments from attendees with a maintenance background were particularly helpful to the rest of the class.

Teacher's Guide to Lead Paint in Historic Buildings

2 LEAD, LEAD HAZARDS, AND LEAD REGULATION A PRIMER

Considerable confusion surrounds lead paint issues. For most people, this confusion springs from a sketchy or partial understanding of the problem. The basic goal of Chapter 2 is to clear up existing misunderstandings, and to provide a simple, straightforward presentation of lead paint issues. The chapter is intended to debunk lead paint myths, and replace those myths with an understanding of the nature of the lead and lead hazards. It is critical that the basic principles in this chapter are understood by all participants prior to continuing with the course presentation. Encourage questions during this chapter. Chapter 2, while brief, will form the foundation for the rest of the course.

The material in Chapter 2 is divided into two sections:

Lead and Lead Hazards Lead Rules, Regulations, and Guidelines

Class Presentation

55 to 65 minutes

Lead and Lead Hazards

20 to 25 minutes

The components of this section include:

What is lead (Page 2-2 to 2-3)

A brief description of the use of lead in paint, and the eventual phasing out of lead paint over safety concerns.

Teacher's Guide to Lead Paint in Historic Buildings

Lead as a toxin (Pages 2-3 to 2-5)

This section presents a description of the toxic effects of lead. It should include the symptoms of lead poisoning. The distinction between the effects of lead poisoning in adults and lead poisoning in children should be established. **Key**

Issue: The current national focus on lead paint has emerged from the concern with central nervous system damage (resulting in impaired IQ, learning disabilities, etc.) in young, lead-poisoned, children.

Pathways to the Body (Pages 2-5 to 2-6)

This section presents a description of the two pathways from which lead can enter the human body – inhalation and ingestion. **Key Issue:** Inhalation of lead is the primary concern with construction workers; ingestion of lead is the primary concern with children.

Key Issue: Common to both pathways is the form of lead – LEAD DUST. The concept of lead in dust cannot be overemphasized. It is likely the most crucial understanding in this chapter's material. The succeeding chapters will all revolve around this concept. Lead-safe renovation is all about minimizing, containing, controlling, and cleaning up lead dust throughout the construction process.

Lead Hazards (Pages 2-6 to 2-9)

This section establishes the critical distinction between the presence of lead paint, and lead paint hazards. Lead based paint hazards are further defined as:

- Deteriorating paint
- Friction and Impact surfaces
- Chewable surfaces
- Lead contaminated soil

Teacher's Guide to Lead Paint in Historic Buildings

Lead Rules, Regulations and Guidelines (Pages 2-10 to 2-19)

35 to 40 minutes

Instruct participants to turn to the chart on page 2-19 in the manual. (Note: Chart 2-19 was printed separately and may still be located at the end of the students' Training Manual. If so, ask the students to move it to the end of Chapter 2). The chart presents the pertinent federal rules, regulations, and other actions that presently govern lead paint work. The rules are presented in the left-hand column. The different type of buildings and projects are listed across the top. Projects are broken down into residential and non-residential categories. Residential projects are further broken down into rental and homeowner. For both residential and non-residential, the chart contains a separate category for lead abatement projects. The shaded portions of the chart indicate where each regulation applies.

Key Issue: The separate category for "lead abatement" projects is critical. As the chart indicates, many of the regulations apply only for projects that are specifically defined, and whose primary purpose, is lead abatement. Rehab projects are currently exempt from many of the regulations.

A summary of each regulation is provided in the manual text. At the time of this writing:

As of 1999, EPA has proposed (but not yet finalized) taking lead refuse and lead-painted architectural elements out of RCRA. This would result in a significant relaxation of disposal requirements for lead paint, essentially taking lead paint out of the hazardous material category.

The lead paint field is changing rapidly. The only guarantee for providing up-to-date material in this section is for instructors to maintain their familiarity of regulatory status. Instructors should have sufficient knowledge of the lead field to remain current with the emerging, and changing, regulations. Prior to teaching the course, instructors should verify the status of these regulations.

Teacher's Guide to Lead Paint in Historic Buildings

One handy tool for staying current with lead regulations is on the Internet.

HUD Lead Regulations

HUD Office of Lead Hazard Control:
www.hud.gov/lea/leahome.html

EPA Lead Regulations

Office of Pollution Prevention and Toxins Lead Page:
www.epa.gov/opptintr/lead/

National Lead Information Center:
www.epa.gov/lead/nlic.htm

3 CAUSES OF BUILDING DETERIORATION

The aim of Chapter 3 is to establish some **critical principles**:

- Paint deterioration, and thus lead paint problems, are inseparable from the causes of all building deterioration.
- The principal cause of building deterioration is moisture.
- The root sources of building deterioration must be addressed to achieve a lead-safe rehabilitation.
- Treating the causes of building deterioration, particularly moisture, protects the building and addresses a number of health concerns.

More than any other audience, preservation professionals have tremendous experience with the causes and consequences of building deterioration. For this reason, Chapter 3 does not attempt to present a course in building diagnostics. Rather, it serves as a refresher session that emphasizes the fact that the sources of lead paint hazards are not mysterious, but quite familiar. It also should establish the realization that the existing renovation workforce (i.e. the class members), and not a specialized industry, are the most qualified and experienced professionals for performing lead-safe rehabilitation projects.

Because of the familiarity of the subject matter, the chapter is best taught through two interactive class exercises.

Exercises 3-A and 3-B

25 to 30 minutes each
50 to 60 minutes total

Teacher's Guide to Lead Paint in Historic Buildings

Class Presentation

10 to 15 minutes

Most of the Chapter 3 material is covered through the two exercises relating to moisture issues. Chapter 3 also touches upon other causes of building deterioration (Pages 3-4 to 3-7). The three categories that should be briefly covered are:

- Foundation problems
- Structural problems
- Paint buildup
- Use and abuse

The last category is particularly pertinent to lead paint problems. Friction and impact on a variety of building components (windows, doors, stairs, etc.) are often identified as causing lead hazards.

The class presentation should conclude with a wrap-up of the topic of building deterioration. Specifically, the class should realize that:

As preservation professionals, they are already experienced with the cause of lead paint problems.

Lead-safe building rehabilitation must address the causes of building deterioration.

Teacher's Guide to Lead Paint in Historic Buildings

Exercise 3-A: Moisture Problems

Pages 3-1 to 3-4

Form: Interactive class contribution

Where: Classroom

Props: Easel, blackboard, or overhead projector

Time: 25 to 30 minutes

Process: Instructor asks the class - "What are the major health and building problems caused by uncontrolled water and moisture in a building?"

The instructor moderates the forum and writes down the correct answers for the class to see. (A blackboard, overhead projector, or large pad of paper on an easel will suffice).

The answers can be listed in two columns:

Building Problems

Health Problems

Upon completion of the exercise, the lists should include:

Building Problems

Health Problems

Paint deterioration, peeling, etc.

Lead hazards

Wood rot

Allergic reactions

Structural Damage

Asthma

Secondary insect attack

Trips and falls

Insulation degradation

Thermal discomfort

Molds and mildews

Promotes pests roaches, rats, etc.

The instructor should point out the connections between the two sets of lists. For instance uncontrolled moisture can cause:

- Paint deterioration which can cause lead hazards.
- Mold, mildews, and cockroaches are all leading causes of asthma and allergic reactions.
- Insulation degradation results in thermal discomfort resulting in people heating with gas stoves or unvented heaters leading to carbon monoxide poisoning.
- Wood rot and structural damage (on exterior stairs and porches, for example) can lead to trips and falls.

Upon completion of Exercise 3-A, the class should appreciate the connection between building problems and health problems. The class should recognize that health problems have common sources, and that providing a healthy environment requires recognizing those sources.

Teacher's Guide to Lead Paint in Historic Buildings

EXERCISE 3-B: Moisture Sources

Form: Interactive class contribution

Where: Classroom

Props: Overhead projector. Make overheads of moisture source illustrations in Appendix 18-30.

Time: 25 to 30 minutes

Process: Instructor asks the class -“What are the major sources of excessive water and moisture in a building?”

The instructor moderates the forum and writes down the correct answers for the class to see (as in Exercise 3-A). The completed list (including some subcategories that may be mentioned) should include the following:

Moisture Sources

Roof leaks

Flashing

Ice dams

Gutters and downspouts

Splash blocks or leaders

Holes in exterior cladding

Doors

Windows

Site/foundation drainage, wicking

Wet basements and crawl spaces

Plumbing leaks

Household moisture

Cooking

Cleaning

Showers

Houseplants

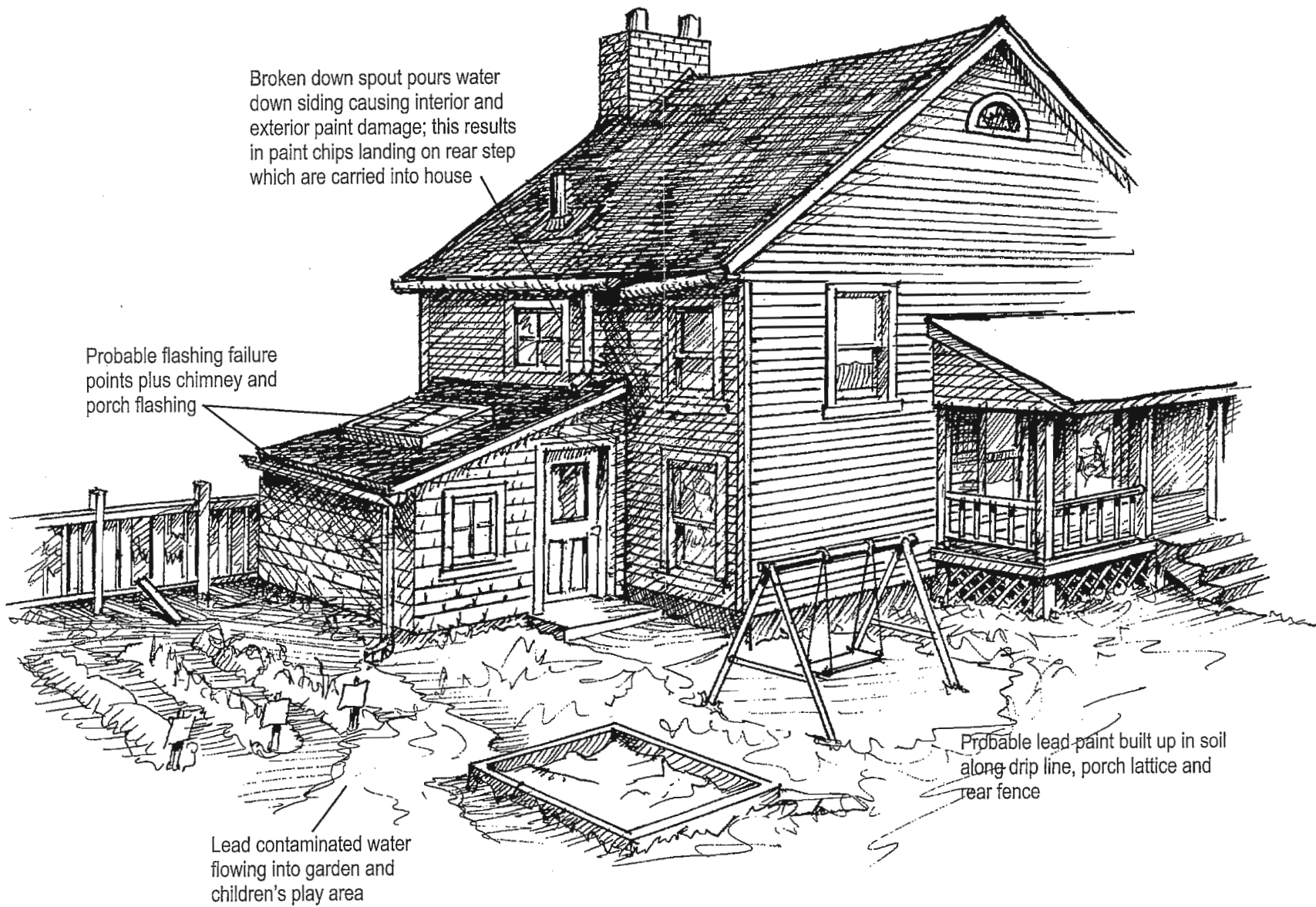
Clothes Drying

Respiration

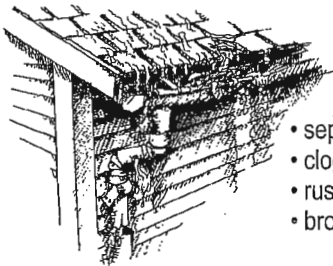
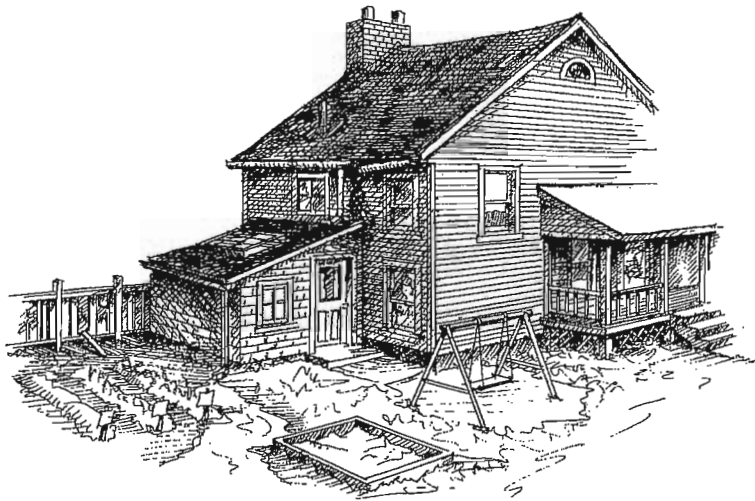
As with exercise 3-A, the instructor may want to point out some relationships between list items. For instance:

- Wet basements and crawl spaces are often the result of poor site/foundation drainage and inadequate gutters and downspouts.
- Condensation problems result from excessive interior humidity in colder climates. The source of excessive interior humidity is typically household moisture and wet basements and crawlspaces.

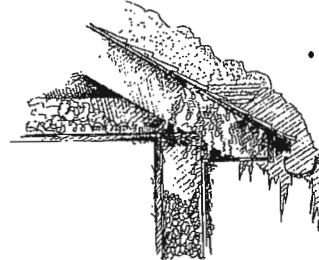
At the completion of Exercise 3-B, the class should understand the sources of water-related building deterioration.



Teacher's Guide to Lead Paint in Historic Buildings



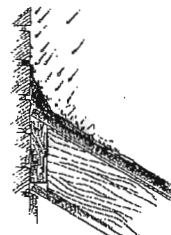
- separated gutter and down spout
- clogged gutter
- rusted downspout elbows
- broken brackets



- describe how an ice dam is formed, pointing out insulation gaps



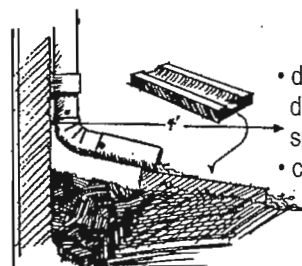
- Poor flashing-roofer's gauze
- attached to both components
 - not set in mortar joint
 - leading to water damage



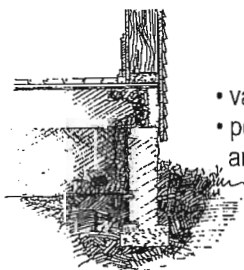
- Correct flashing
- copper or aluminium
 - set in masonry joint
 - free to move at roof with expansion/construction
 - backed up with canted strip



- Draining onto backfill with poor grading



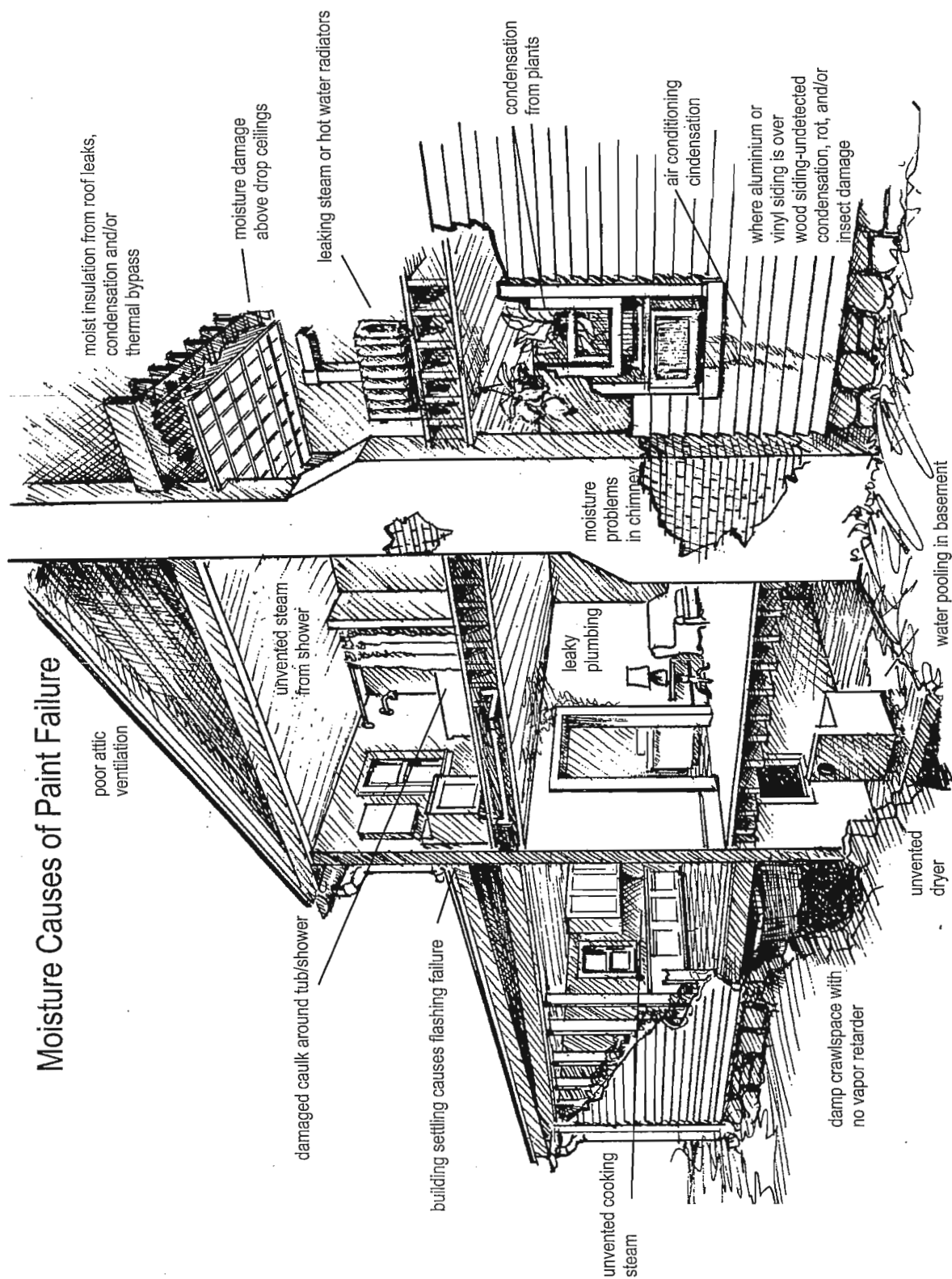
- draining past backfill using down spout extension and splash block
- correct grading

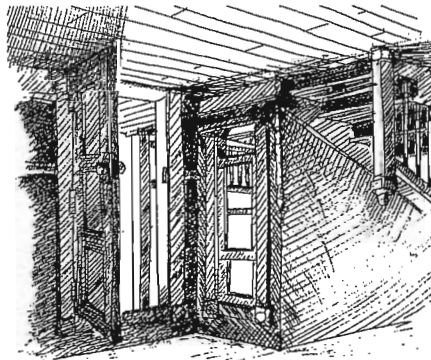
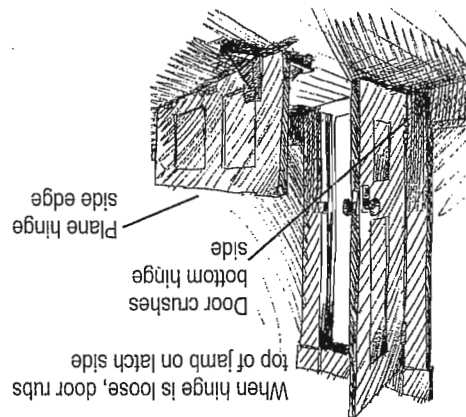
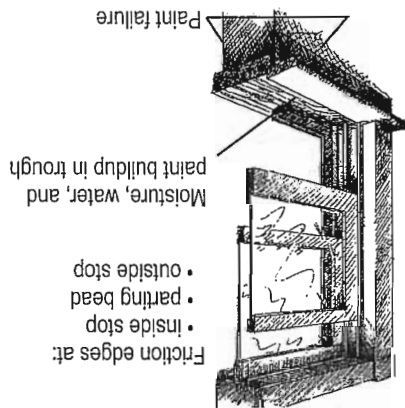
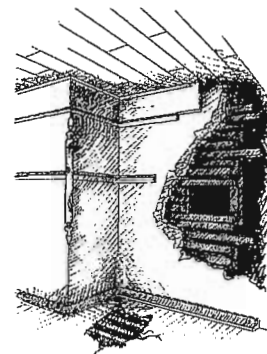
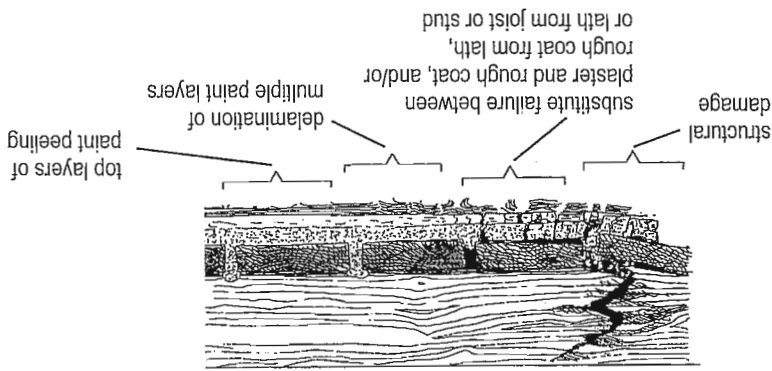


- vapor barrier (use true vapor barrier) on soil
- perimeter insulation to turn back under floor and over soil a couple of feet

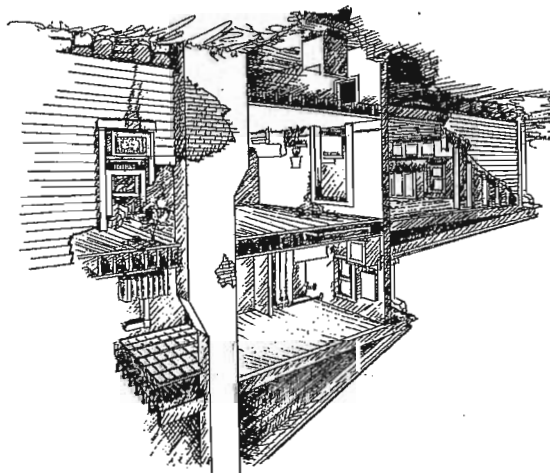
Teacher's Guide to Lead Paint in Historic Buildings

Moisture Causes of Paint Failure





- "Chewable" surfaces are round, horizontal, at a child's mouth height and fun places to hang out;
- window stool nose
- stair tread nose
- interior and exterior railings



4 EVALUATING A BUILDING FOR LEAD

Chapter 4 introduces the class to the testing and evaluation techniques for determining lead paint content in buildings. Lead testing and evaluation is a specialized field, and much of the material provides some explanation of that field. The principal goals are to:

- demystify the testing techniques and profession, and
- examine how and when lead evaluation can help in planning and performing a rehabilitation project.

Chapter 4 is divided into three sections:

- The various types of lead testing procedures.
- The professional lead evaluation business.
- Choosing a lead evaluation strategy.

The format for presenting this material is through a classroom presentation and dust wipe sampling Exercise 4-A.

Class Presentation

30 to 35 minutes

Section 1 – Environmental Sampling and Testing Procedures (Pages 4-1 to 4-8)

Section 1 presents six types of testing methods that test for the presence of lead in paint, or determine the nature and extent of lead hazards that building occupants encounter. During this presentation, the instructor may want the class to turn to page 4-3, which provides the units of measurement and federal hazard levels for these tests. The six tests to be discussed are:

Teacher's Guide to Lead Paint in Historic Buildings

XRF testing

Key Point: This testing can only be performed by a trained and licensed professional. XRF testing is the standard test in the lead inspection profession. It determines how much lead is present in the paint, but does not determine which paint layer contains the lead, nor does it determine the level of risk. **Key Issue:** Emphasize that the presence of paint does **not** necessarily constitute a risk.

On-site chemical testing

Key Point: While over-the-counter chemical tests are easy, inexpensive, and widely available, their use has not yet been approved in the HUD Guidelines. For preservationists, paint chip sampling provides the surest indication of lead in paint.

Water sampling

Key Point: This is a risk assessment test to determine the lead content in the water supply. Samples are sent to a laboratory for analysis. This test is typically used in cases of childhood poisoning.

Soil sampling

Key Point: Soil sampling is a risk assessment test to determine the lead content of soil on a property. Samples are sent to a laboratory for analysis. Because exterior soil can be tracked and blown into residences, and because children play outside, a risk assessment of a child-occupied building will often include soil sampling.

If a rehabilitation project includes exterior work on painted surfaces, it is advisable to take a soil sample prior to work to establish the baseline lead content level. A second sample at the conclusion of exterior work can establish that the work did not raise the lead content of the soil.

Teacher's Guide to Lead Paint in Historic Buildings

Paint chip sampling

Key Point: Paint chip sampling involves taking a sample of paint for laboratory analysis.

Whenever work will disturb painted surfaces, paint chip sampling can be used to confirm the lead content of the paint. This can be a useful planning tool.

Dust wipe sampling

Key Point: Dust wipe sampling measures the concentration of lead in dust. Samples are sent to a laboratory for analysis.

Key Issue: It is a misconception that only licensed inspectors and risk assessors can do testing. That is true only for XRF testing. Anyone can take and send samples to a laboratory for analysis but they may not claim they are certified to do a "clearance test." A sampling technician (a new EPA discipline) may do a clearance test. Instructions for taking these samples are included in the Appendices of the Training Manual.

Dust wipe sampling is the most useful test procedure during a rehabilitation project. **Key Point:** lead in dust is the principal source of lead poisoning, and lead-safe renovation is about minimizing, containing, and cleaning up dust. The manual describes four phases when dust wipe sampling may be valuable (Pages 4-5 to 4-7):

- Where a child or pregnant woman is present (to determine risk)
- Before construction (to establish baseline)
- During construction (to monitor work practices)
- At the completion of work (clearance testing)
- Post-project testing (to determine the effectiveness of the intervention and maintenance)

Teacher's Guide to Lead Paint in Historic Buildings

Instructor's note: Exercise 4-A, Dust Wipe Sampling, can be inserted at this point to break up the class presentation section. The exercise can also be placed at the end of the chapter.

Section 2 – The Lead Evaluation Profession

(Pages 4-9 to 4-13)

This section examines the specialties that comprise the lead evaluation profession.

Lead Paint Inspection

A surface-by-surface investigation of painted surfaces. Does not seek to identify lead hazards.

Lead Risk Assessment

An identification of lead hazards.

Sampling Technician

An identification of lead hazards and clearance samples.

The instructors should explain how EPA-certified training is organized nationally, the training requirements of each specialty, and provide some discussion on how to choose an evaluation specialist when desired.

Section 3 – Choosing an Evaluation Strategy

(Pages 4-12 to 4-18)

With the background from the first two sections, section 3 presents the options when choosing an evaluation strategy. Instructors should have the class turn to the table on page 4-13 for this presentation. The options to be discussed are:

Teacher's Guide to Lead Paint in Historic Buildings

Assume all paint has lead

This is the default position for most rehabilitation projects. It is a critical assumption in the absence of testing.

Take selective samples

Selective sampling can provide valuable information to the rehabilitation design without employing specialists.

Hire a Risk Assessor

Advisable when working on child-occupied buildings.

Hire a Lead Inspector

Appropriate when comprehensive documentation of all painted surfaces is desired.

Hire a Sampling Technician

This is a new category that may not be available in your state. Strongly encourage it becoming a certifiable trade in your state as it will lower the cost of certified samples and clearances. The curriculum is available from HUD.

EXERCISE 4-A: Dust Wipe Sampling

Form: Each participant individually

Where: Classroom floor

Props: Dust sampling kits and forms

Time: 35 to 40 minutes

Process:

1. Instructor demonstrates dust wipe sampling protocol.
2. Dust wipe sampling kits and laboratory forms are distributed to all participants.
3. Each participant takes a single surface sample on floor and fills out laboratory submission form.
4. Each participant fills out the form for a composite sample.

Teacher's Guide to Lead Paint in Historic Buildings

Street Address / Apt. Number: _____
 City, State, Zip: _____
 Owner Name: _____ Owner Phone Number: _____
 Occupant Name: _____ Occupant Phone Number: _____
 Are there children under seven years present? _____
 Is there peeling paint in the unit? _____
 If yes, how much and where? _____

Fax results to: _____
 Mail results to: _____

LAB: Please enter results
in this column

Check desired turn around time: 7 days _____ 3 days _____ 24 hours _____

SAMPLE NUMBER	IF COMPOSITE a b c d	NAME OF ROOM	BUILDING COMPONENT (floor, trough, stool, etc.)	DIMENTION OF SURFACE SAMPLED	CONDITION			LAB RESULT µg/ft'	ABOVE CLEARANCE
					SMOOTH ↙	ROUGH ↙	CARPET ↙		
1	a	_____	_____	" X "				_____	_____
	b	_____		" X "					
	c	_____		" X "					
	d	_____		" X "					
2	a	_____	_____	" X "				_____	_____
	b	_____		" X "					
	c	_____		" X "					
	d	_____		" X "					
3	a	_____	_____	" X "				_____	_____
	b	_____		" X "					
	c	_____		" X "					
	d	_____		" X "					
4	a	_____	_____	" X "				_____	_____
	b	_____		" X "					
	c	_____		" X "					
	d	_____		" X "					
5		_____		" X "					
6		_____		" X "					
7		_____		" X "					
8		_____		" X "					
9		_____		" X "					
10		_____		" X "					
11		_____		" X "					
12		_____		" X "					

As is dust test ☐ Post work dust test ☐

Total number of samples _____

Date of sample collection ____/____/____ Date Shipped to Lab ____/____/____

Shipped by _____ Signature Results received by _____ Signature Date ____/____/____

Community Resources, Baltimore Maryland - You may copy this form without permission.

5 PLANNING FOR SAFE REHABILITATION

Chapter 5 presents an overview of the rehabilitation planning process, and presents the case for historic preservation values. As with Chapter 3 on building deterioration, an audience of preservation professionals and contractors will have considerable experience with the planning process and these values. It is up to the discretion of the instructor to gauge the experience of the audience.

Critical point: Preservation planning involves the integration of numerous factors in the decision-making process. The issues surrounding lead paint is but one of these factors when making design decisions. Planning for lead-safe rehabilitation should not dramatically change the comprehensive nature necessary in preservation planning. No one issue, including lead safety, should dominate the planning process.

Working lead-safe will change how one does the work, not dictate what work gets done.

Teacher's Guide to Lead Paint in Historic Buildings

EXERCISE 5-A : Window Planning

Chapter 5 starts with an introductory exercise, followed by a class presentation.

Form: Interactive class contribution

Where: Classroom

Props: Easel, blackboard, or overhead projector

Time: 15 to 20 minutes

Process: Instructor asks the class - "What are the main considerations when deciding to restore or replace historic wood windows?"

The instructor moderates the forum and writes down the answers for the class to see. The completed list should include the following:

Window Factors

Original quality of construction

Condition assessment

Historic significance

Operability

Life Cycle Cost

Compare new window replacement & lead-safe renovation

Energy conservation

Presence and condition of lead paint

Maintainability

This exercise should demonstrate the **key issue**: lead is only one of numerous considerations when making design decisions.

Instructor's note: Because window restoration is such a critical preservation and lead paint issue, a full discussion of window considerations is found in Chapter 8, p. 8-19 to 8-30. Instructors should be familiar with this material in presenting Exercise 5-A. For instance, studies on the issue of energy conservation choices for windows indicate that repair of existing historic windows is the most cost-effective option (see table p. 8-23 in the Training Manual). At the completion of the exercise, the instructor should reference this section for the class.

CLASS PRESENTATION

10 to 15 minutes

The class presentation is comprised of two sections.

Section 1-Preservation Planning

(Pages 5-1 to 5-5)

This section builds on Exercise 5-A, going from the specific (window planning) to the general (preservation planning). An overview of the major categories should be presented:

- Function and occupant use
- Historic significance
- Condition assessment
- Life cycle cost
- Health and comfort

Section 2-Historic Preservation

(Pages 5-5 to 5-10)

This discussion consists of two parts:

- The case for a preservation approach
- Review of the Secretary of Interior's Standards

Again, it is up to the discretion of the instructor to gauge the experience of the audience. In an audience consisting of preservation professionals, this section can be quite brief. If an audience includes participants that are new to historic preservation, however, it will be quite valuable to review both parts of the section. The lead-safe rehabilitation course is grounded in the preservation philosophy contained in this section. Developing a shared understanding of these basics will be important throughout the remainder of the course.

Teacher's Guide to Lead Paint in Historic Buildings

6 SITE SETUP

Chapter 6 deals with setting up a work site while protecting the well being of workers, occupants, the building, and the environment. The presentation includes the first visit to a workstation, and concludes with an exercise that puts the principles into practice.

Class Presentation

10 to 15 minutes

The presentation should consist of three short parts:

Pre-work preparation

(Pages 6-1 to 6-4)

Examines the special considerations in setting up a work site in three general categories of site condition -1) abandoned property, 2) turnover property, and 3) occupied property. Discuss security and provision of utilities at the site.

Work areas

(Pages 6-4 to 6-9)

Presents 4 work areas to be established at the work site:

- Adjacent (Clean up) area
- break area
- storage area, and
- dust room.

Note: The adjacent area and dust room are workstations that will be visited during this presentation. The details of the preparation and use of these areas will be best discussed at that time.

Teacher's Guide to Lead Paint in Historic Buildings

Exercise 6-A: Site setup on a vacant commercial building.

Form: Individually, or in pairs

Where: Classroom, at desks

Props: Exercise handout 6-A, (2 pages)

Time: 15 to 20 minutes

Process:

1. Instructor delivers handouts and provides instructions.
2. Appendix-3 of the handout provides an elevation sketch and floor plans for a typical Main Street commercial building.
3. Appendix-2 of the handout provides a description of the building and the scope of work for the rehabilitation project.
4. Class participants are instructed to draw a site setup plan on the handout showing the setup areas as indicated by the key on Appendix-2.
5. Upon completion, instructor projects an overhead of the floor plans, and opens the discussion of the setup plan. Participants are encouraged to contribute their setup and justifications. Instructor can draw on transparency which is on the overhead projector, or directly onto a blank flip chart on an easel or taped to a wall with the transparency projected onto it. The flip chart paper serves as a screen and can also be drawn on.

It should be recognized that there is no particular "right" answer to this exercise. Several justifiable approaches may exist. The purpose of the exercise is to explore the chapter principles through the experience and opinions of the class participants.

Teacher's Guide to Lead Paint in Historic Buildings

SCENARIO

This commercial building on Main Street has been abandoned for 2 years, and is now slated for restoration. The roof is damaged towards the back of the building, which caused severe water damage to the joists in that area. The building is full of trash. The building must be secured during the entire restoration.

SCOPE OF WORK

Exterior

- Repair and paint trim as necessary
- Restore all front windows
- Install steel security door at rear
- Strip and rehang side door
- Remove 1970's store front
- Install 1901 reproduction store front

Interior

- Sand and finish T&G floor
- Restore tin ceiling (replace 4 panels)
- Fix exterior walls
- Replace damaged joists in rear
- Install subfloors
- Frame out partition wall in rear as per plan
- Install new HVAC and electric systems
- Drywall, finish, paint
- Install tile and fixtures in bathroom
- Install finish carpentry

ASSIGNMENT

Place the following site setup requirements on the plan on the following page:

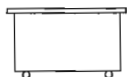
Cleanup Area -



Break Area -



Dumpster-



Dust Room -

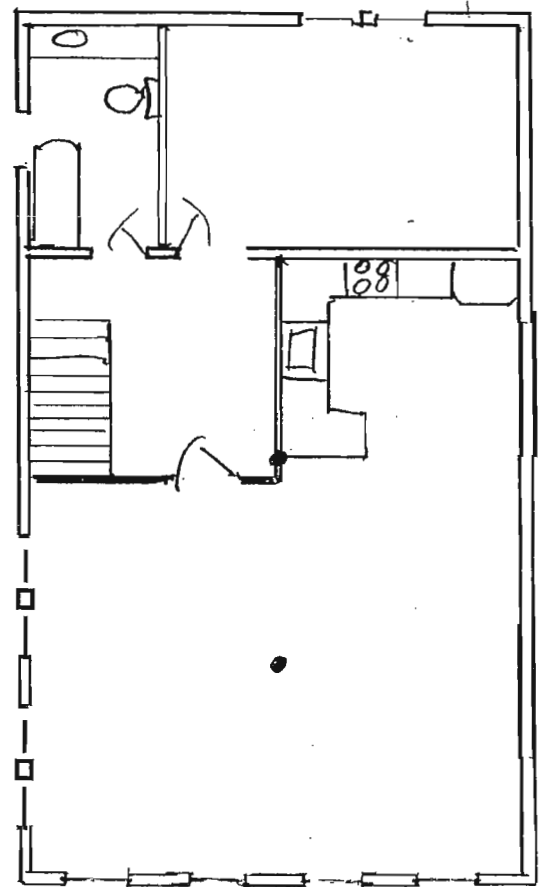
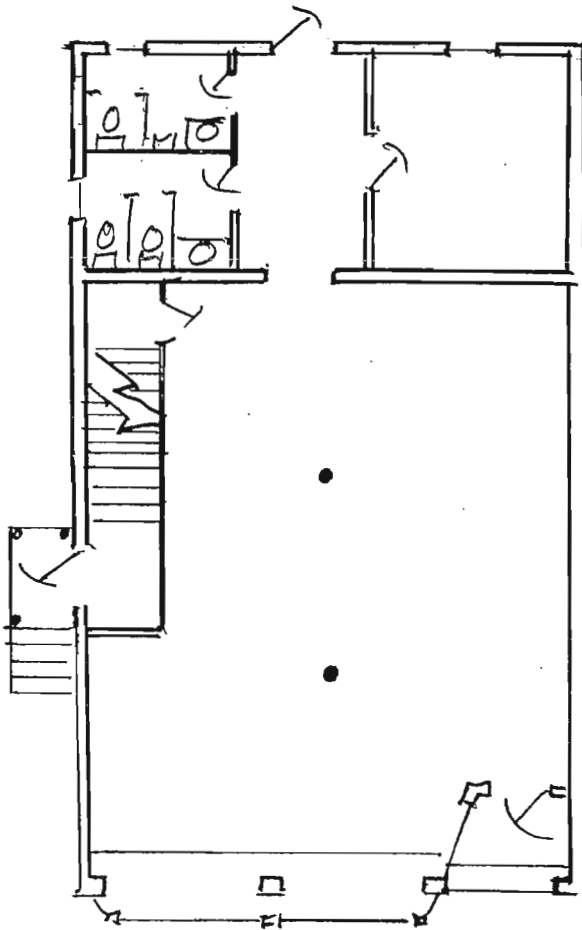
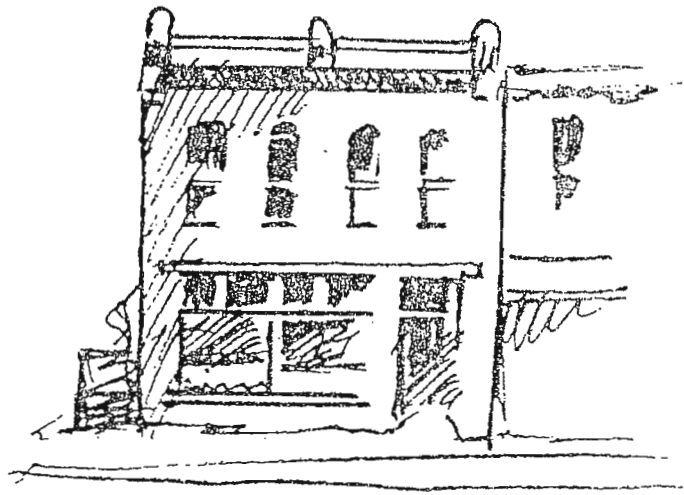


Storage Area -



-) If necessary, setup the plan in stages (you can use the floor plan on the first page, too) Be prepared to discuss your plan.

Teacher's Guide to Lead Paint in Historic Buildings



24'

7 DUST CONTROL- PROTECTING WORKERS AND THE WORK SITE

Chapter 7 presents a great deal of critical information. Throughout the course there is an emphasis on the hazards of lead dust. Chapter 7 provides the essentials of dust control aimed at protecting the workers, the occupants, and the building. The material is presented in three sections:

- **Containment**-Confining and preventing the spread of dust on the job site.
- **Worker Protection**-Engineering controls to minimize airborne dust, and use of respiratory protection for those times when airborne dust is unavoidable.
- **Cleanup**-Removing construction dust and debris to a high standard.

Key Issue: Dust control is not just a lead issue. All demolition dust is unhealthy. A high level of construction dust is bad for workers and occupants regardless of lead content. This chapter is based on the following principles:

- Create as little dust as possible.
- Don't spread dust.
- Don't breathe dust.
- Clean up and clean up again.

Chapter 7 instruction consists of a classroom presentation and two interactive exercises.

Class Presentation

45 to 50 minutes

Section 1 – Containment

(Pages 7-2 to 7-10)

Containment is a general term that describes methods for minimizing the spread of dust on a job site. There are four levels of containment that should be discussed:

- **Masking** – for low dust treatments
- **Containment, Interior** – for moderate dust levels on interior jobs or for separating high dust areas from other work areas
- **Containment, Exterior** – for moderate dust levels on exterior jobs
- **Isolation** – to completely separate high dust areas from occupied spaces

Section 2 – Worker Protection

(Pages 7-11 to 7-19)

Worker protection issues are broken down into three categories:

- Engineering controls
- Respiratory protection
- OSHA review

Engineering controls

Key Issue: Engineering controls are safe work techniques and practices that reduce workers exposure to dust and fumes. The goal of engineering controls is to minimize the need for worker respiratory protection. A list of engineering controls starts on page 7-11 of the training manual.

Teacher's Guide to Lead Paint in Historic Buildings

Respiratory protection and OSHA review

Because OSHA requirements are based on airborne lead levels, these two sections should be discussed together. The discussion should include:

- Those operations requiring respiratory protection
- Prohibited practices-excessive exposures
- Review of OSHA Lead in Construction Rule – which defines categories based on exposure levels to airborne lead dust
- A simple compliance strategy

Key Issue: The goal on every project is to design work that keeps workers safe and thus, to the greatest degree possible, out of a respirator. If the amount of time that respirators are required is minimal, workers are more likely to use them. Expose the fewest workers possible to the least amount of dust for the shortest time in the smallest space.

Key Issue: The OSHA Lead in Construction rule was developed for larger industrial jobs. The application of this rule to smaller rehab jobs is awkward. The compliance strategy contained in the manual is more stringent than OSHA standards. It is based on the strategy that aims to keep as much work as possible below $\frac{1}{2}$ of OSHA standards.

Teacher's Guide to Lead Paint in Historic Buildings

Exercise 7-A: Engineering Controls

Form: Class discussion

Where: Classroom, at desks

Props: none

Time: 5 to 10 minutes

Process: Instructor presents four work task scenarios, one at a time:

1. Cutting off the bottom of a heavily lead-painted door using a power saw.
2. Planing ¼" off the hinge edge of a heavily lead painted door.
3. Cutting a 12 square inch opening in a plaster wall in an occupied home.
4. Removing the damaged lead paint from the nose of a window stool in a child's bedroom.

For each scenario, the class is asked the following questions:

- What tool would you use?
- For the tool chosen, what method(s) could you use to minimize dust?
- What level of containment is necessary for each method? Is a dust room advisable?
- Is respiratory protection advisable?

The goal of the exercise is to explore the concepts of tool choice, engineering controls, containment, and worker protection in real world circumstances.

Teacher's Guide to Lead Paint in Historic Buildings

Class Presentation-continued

Section 3 – Clean Up

(Pages 7-19 to 7-26)

Cleaning is a crucial aspect of lead-safe rehabilitation.
Discussion should include:

- The nature of lead dust
- The four phases of a rehab project when cleaning is important:
 - Pre-work, vacant and occupied
 - Post demolition (or after any particularly dusty phase)
 - Daily, in-process cleaning
 - At completion “clearance” cleaning
- Equipment needed
- Cleaning procedures

Disposal

Examine how to setup disposal facilities. **Key Issue:**
Emphasize the advantage of limiting any debris that can be classified as hazardous waste, to maintain the “conditionally exempt small generator” status. This is also encouraged in the new EPA one day course.

Exercise 7-B: Dust Control – Protecting the Site and Occupants

Form: Individually, or in pairs

Where: Classroom, at desks

Props: Exercise handout 7-B, (5 pages)

Time: 25 to 30 minutes

Process:

1. Instructor delivers handouts and provides instructions.
2. Appendix 5 of the handout provides an elevation sketch and floor plans for a turn of the century residential building.
3. Appendix 4 of the handout provides a description of the building and the scope of work for the rehabilitation project.
4. Class participants are instructed to schedule the work. The work can be scheduled in phases. For each phase, students should use the key to indicate on the floor plans the placement of:
 - Containment and isolation barriers
 - Worker and resident access
 - Low and high dust areas

The work schedule will emphasize dust control and occupant protection.

5. Upon completion, instructor projects an overhead of the floor plans, and opens the discussion of the dust control plan. Participants are encouraged to contribute their plan and justifications. Instructor can draw on the overhead or project on a large sheet of paper and draw on the paper to illustrate the approaches in an interactive exchange.

As with Exercise 6-A in the previous chapter, it should be recognized that there is no particular “right” answer to this exercise. Several justifiable approaches may exist. The purpose of the exercise is to explore the fundamentals of dust control and occupant protection through an interactive class discussion.

Teacher's Guide to Lead Paint in Historic Buildings

DUST CONTROL

A turn of the century residence is scheduled for rehab. The owners have two small children who share a bedroom. The work should be completed in less than one month. The family can arrange to vacate the house during the day, but that arrangement is difficult, and can occur only on a limited basis. The family can be out of the house for one or two nights but avoiding any relocation is preferred. The 2 parents and 2 young children can share a bedroom for 2 or 3 nights.

SCOPE OF WORK

Repaint exterior including,

- Repair or replace trim elements as required.

Windows (restore)

- Remove and replace vinyl living room windows with wood reproductions
- Restore and repaint all other original sash

Interior (minor repairs)

- Patch, prime and repaint 1st floor
- Laminate drywall to water-damaged ceiling, 2nd floor rear
- Rehang 4 binding doors, 2nd floor

Kitchen (major remodel)

- Remove all appliances, cabinets and sheet goods
- Install wood T&G floor
- Install new upgraded electric
- Install new appliances and cabinets

ASSIGNMENT

Perform an initial schedule of the residential rehab project. For each phase of the job, mark on the site plan the following dust control elements:

Low dust area



High dust area



Containment Barrier



Isolation Barrier



Worker Access



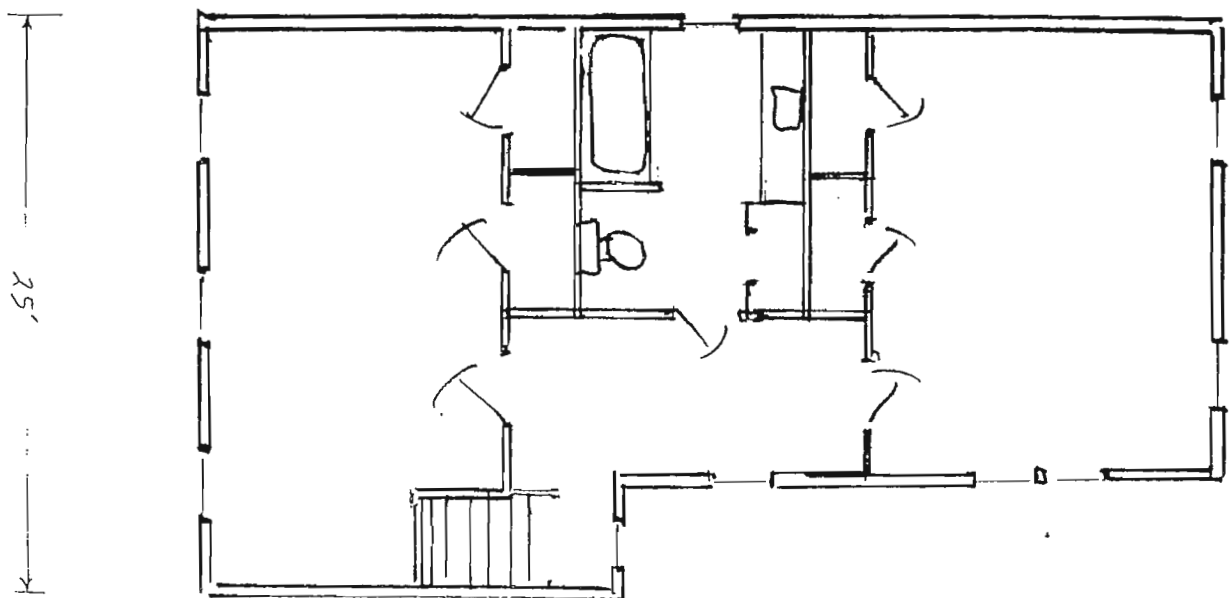
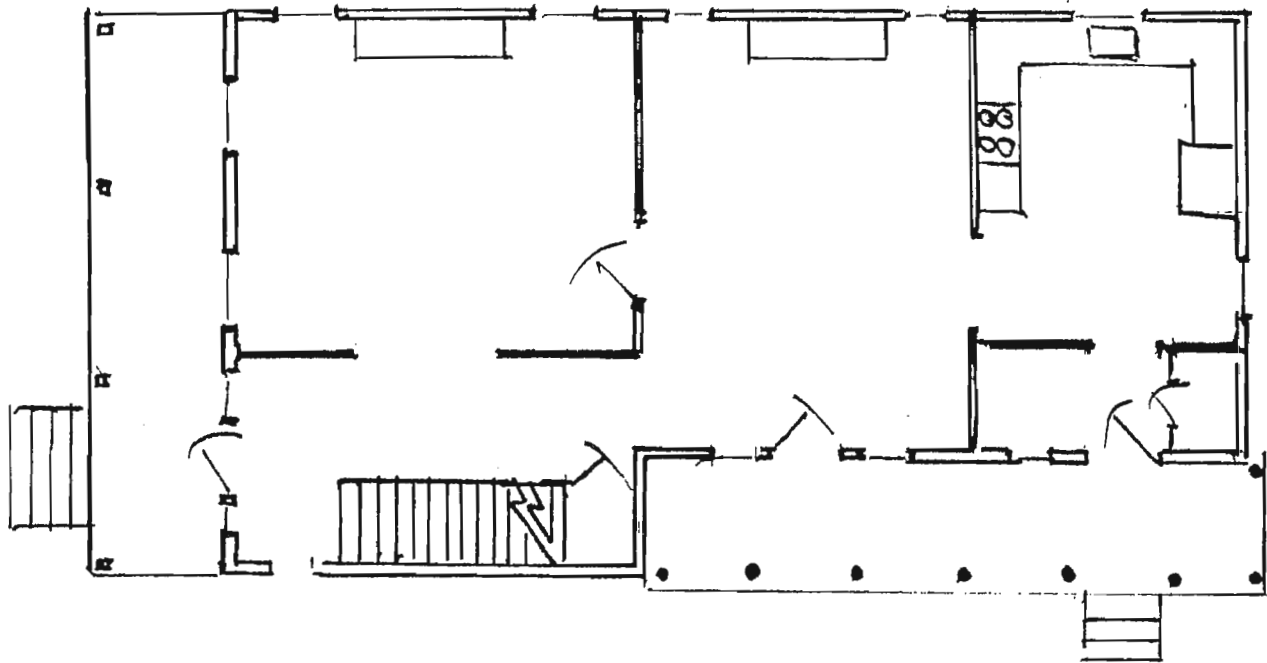
Resident Access



Adjacent area



Teacher's Guide to Lead Paint in Historic Buildings



8 TREATMENTS

Class Presentation

20 to 25 minutes, but may vary

The majority of the time spent teaching Chapter 8 will occur at workstations. There is a need, however, for some classroom presentation.

Introduction (Pages 8-1 to 8-2)

An introduction to treatments should start with basic definitions of treatment terms from the lead hazard reduction field. These terms are helpful in examining component treatments for lead safety.

Key Issue: There is a strong similarity between lead hazard control work and rehabilitation work. Once the terms are understood, most lead hazard control treatments should be very familiar to building rehabilitation specialists. See Table on p. 8-3.

Paint Stripping (Pages 8-4 to 8-5)

While paint stripping is becoming increasingly rare as a lead abatement treatment, its use in rehabilitation work remains fairly common. Presentation should include the various options and hazards associated with this work. Emphasize the extreme danger methylene chloride can present even with respirator use.

Key Issue: Virtually all paint stripping is hazardous to workers for one reason or another. Safety of workers, the environment, and waste disposal are critical. Large paint stripping projects are best handled by certified professionals who are experienced and equipped.

Teacher's Guide to Lead Paint in Historic Buildings

Paint Stabilization (Pages 8-7 to 8-8)

Key Issue: Emphasize the importance of very frequent water misting to reduce dust levels.

Windows (Pages 8-18 to 8-30)

Windows are perhaps the most endangered component on both rehabilitation and lead abatement jobs. For this reason, considerable space has been dedicated in the Training Manual to cover various window issues and rehabilitation techniques. Some classroom presentation and discussion of the issues surrounding historic windows will complement the window workstation.

Other Treatments

Not all of the treatments covered in the Training Manual can be setup as workstations. Some time should be dedicated for classroom presentation and discussion of other components and treatments. An interactive classroom approach to these component treatments is effective. Most classes will have questions on specific situations and treatments. An open-ended discussion of the best approach, in light of the principles of lead safety, will serve the class well.

Work Stations

Duration: Three to four hours in two 2-hour segments. Time will vary with number of stations.

Chapter 8 deals with specific treatments for different building components. These treatments are most effectively presented through on-site demonstrations.

These presentations are best taught by two people with one person demonstrating and a second person discussing the operation, choice of tools and products, and options. The quality of the presentations are dependent on the effort put into the setup. These demonstrations are the heart of the seminar.

Teacher's Guide to Lead Paint in Historic Buildings

Ideally the workstations will be setup in a building that is only a short walk from the classroom. The demo site must be safe but at the same have enough exterior and interior wall, window and door problems to be good examples of needed repair.

The following are requirements for the site. Substitutions are possible.

- Double hung, counter weighted windows with flaking and peeling paint on at least the exterior.
- Heavily painted panel doors which are sticking on the latch side and crushing on the hinge side.
- Plaster walls with some cracking and/or moisture damage
- Wood siding with flaking/peeling paint on an area accessible from the ground.
- A porch with flaking/peeling paint.
- A working bathroom – clean enough to use, stocked with toilet paper and paper towels. This could be in a neighboring building or a “johnny-on-the-spot.”
- Access to water for clean-up.
- Access to electric outlets (you could pay a neighbor \$20.00 to plug in.)
- Each demonstration room will need to be big enough for the demonstration. The demonstration room will need to be about 14' x 16' (see Exercise 8-5 for details)

Setting up the demonstration site is a couple of days work for one or two people. As some tools and supplies need to be ordered, ordering should begin a month in advance. Finding a good demo site is not easy. The search should begin a couple of months before the training. We have found some excellent sites for this and similar training. Most of them have been old buildings or homes slated for renovation.

Teacher's Guide to Lead Paint in Historic Buildings

About 18 demonstrations will take place at 8 workstations as follows:

A. Correct Cleaning

B. Clean-Up Station and Signage

C. Door Inspection and Adjustment

D. In-place Management Options

E. Dust Room

- Demonstrate how to setup a dust room for high dust work including the installation at a double flap door containment
- Demonstrate safe mechanical stripping of sash
- Demonstrate window repair and rehab
- Demonstrate planing door

F. Walls and Ceilings

G. Exterior Set-up, Siding and Trim

H. Security System

Supplies to be used at several stations:

Masking

- 2 rolls each high grade duct tape and roll of 4" masking tape
- 1 roll of 6 mil poly 100'x10'

Personal protection

- 8 pair non-skid, elastic-top shoe covers
- 4 Tyvec suits – elastic at ankles and wrists, no hood
- 4 painter's hats
- 4 pair safety glasses with eyeglass straps
- 8 each N95 and N100 particulate respirators with exhalation valve
- 1 half face negative air respirator with 1 set each: organic vapor filter particulate filter and combination filter

Exercise 8-A Correct Cleaning Workstation

Setup

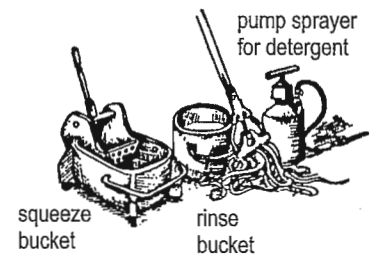
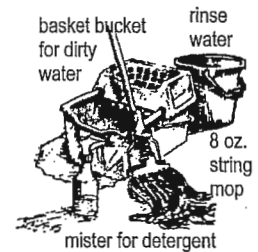
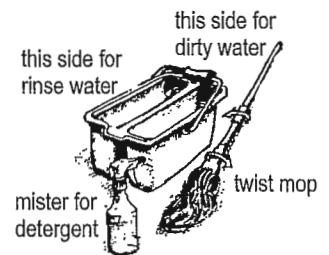
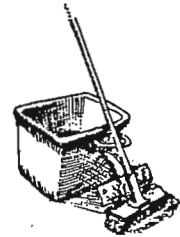
- Two sheets 4"x4" or 3"x3" sheets of luan plywood painted flat black one side
- 4 mop and bucket sets as follows:
 1. The wrong way – an approx. 2.5 gal. bucket and sponge mop with hinged squeeze plate
 2. Residential kit – two workable options are:
 - Double bucket and twist mop, plus mist bottle
 - One approx. 2.5 gal. bucket, a basket bucket and an 8 oz. mop, plus mist bottle
 3. Commercial – a 28 to 32 oz. mop, pump sprayer, 5 gal. rinse bucket and commercial squeeze bucket

Process Before demo

- Crush up pieces of drywall (using the end of a 2x4 in a 5-gallon bucket works well) and remove paper. Produce about two cups of drywall dust.
- Spread a handful of dust on each plywood sheet and rub it in with shoe over entire surface.

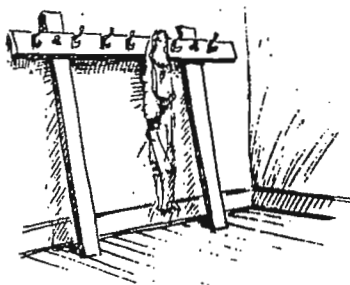
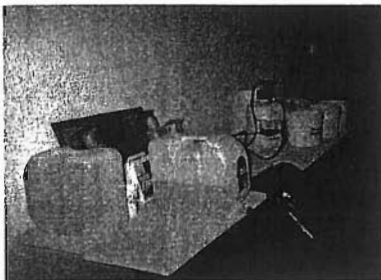
The demo

- Fill the 2.5 gal. single bucket to be used with the sponge mop about 1/3 full and wash the first luan square with the sponge mop. Point out the contamination of the detergent water due to cleaning with water you've squeezed out of the sponge mop; small surface area of the sponge mop; metal squeeze plate trapping dust on face of sponge; and small amount of rinse water.
- Using the split bucket system with one half the bucket $\frac{3}{4}$ full, wash the second square, first misting with water (this would contain detergent), pointing out the detergent never gets contaminated. Rinse the twist mop often and twist out in empty half. Point out the vastly greater surface area of a string mop over a sponge mop, and ample rinse water.
- Point out the other two systems also include 3 containers and work in a similar manner. For commercial jobs dump rinse water out often (in toilet) and change mop heads from wash up to rinsing.
- Later, when squares have dried, one should remain bright white, the other almost black.



Teacher's Guide to Lead Paint in Historic Buildings

Exercise 8-B Clean-up Station and Signage



Setup

Place clean-up station supplies on a wide board (approx. 12" x 6') on boxes or sawhorses at the entrance to demonstrate site.

Supplies for the clean-up station

- Bottled water in a two and one half gallon container with spigot and cups
- Garbage pail with plastic bag liner
- Eye wash station – two 1 quart squeeze bottles
- A small first aid kit
- 3 one gallon plastic buckets
- A soap pump bottle
- 2 rolls paper towels
- A small pump sprayer
- Clip board containing:
 - workers certifications
 - emergency phone numbers
 - air monitoring info as necessary
 - injury reports
- garbage bag

There would also be a place for workers to hang Tyvek suits, shoe covers, caps, respirators (in a zip lock bag) and safety glasses. Install a row of hooks on a horizontal furring strip supported by two 6' furring strip legs attached with wing nuts so it will fold up.

The clean up station would be at the entrance to the work site. Two signs would be posted at this entrance:

LEAD WORK
NO EATING
DRINKING
OR SMOKING

RESPIRATORY
PROTECTION
REQUIRED

RESPIRATORY
PROTECTION
NOT
REQUIRED

- The "Lead Work, No Eating, Drinking or Smoking" warning sign goes up at all entrances for the job.
- The second sign would be two sided. The displayed side would let both workers and people coming on the job site know when respirators are required and when they are not. This sign goes up at all entrances.
- The clean-up station should be used by people doing the demonstrations and the warning sign should be observed.

Exercise 8-C Door Inspection & Adjustment

Setup

This would be a heavily painted door that is crushing below the bottom hinge and rubbing at the top on latch side. Loosen top hinge screws if this condition doesn't already exist.

Demo

Lift door up and down by knob to determine if hinges are loose, then close door and try to run a spackle knife blade around perimeter to show where it's binding.

Demo

Tighten hinges by removing screws, putting dowels in screw holes and replacing screws. If the door is still rubbing or crushing, send the door to the dust room to plane the hinge edge.

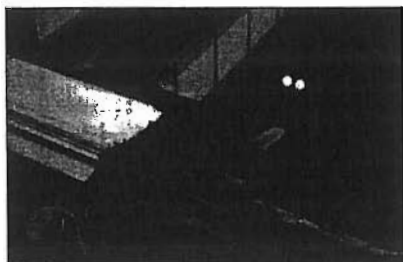
A spackle knife blade should fit between door edge and jamb on all of all 4 sides.

Exercise 8-D Window In-Place Management Options

Setup

Demonstrate basic 6 mil masking for in-place-management, low dust work. Include taking shoe covers off when stepping off poly.

This is the lowest risk level work that creates dust. The top sash is left fixed in place and wet scraped with the jamb from the outside.



The inside stop is removed and replaced (except if it has historical significance) and the bottom sash is wet scraped along edge where it will contact stop. Sash is then painted and reinstalled on ropes or chains. If sash rope or chain are not in place, demonstrate why not to use a stick and/or optional hardware for holding open window. If there is a storm window frame a piece of aluminum will be fit and installed into the trough in mastic caulk. Before the installation drill two 5/8" holes into storm window frame, flush with sill. If counter weight system needs to be restored, or paint is in very poor condition, the higher level of intervention will be necessary. This would include:

- Remove at least inside stop and parting bead
- Send both sash to dust room (see 8-E for dust room work)
- Wet-scrape jamb, replace sash rope with chain, rout out any rot on sill and bottom of jamb. Fill or epoxy, then prime and paint jamb. Prime and paint inside stop and parting bead to be installed when sashes return from dust room.

Supplies

- 1 roll coil stock 10" x 10' brown one side, white the other
- caulk gun, tube of mastic, and tube of white or brown acrylic caulk
- parting bead and inside stop
- 3/8" drill bit and drill motor
- mist bottle or pump sprayer
- carbon scrapers
- wood filler for sill and possibly epoxy system for jamb repair (described in sash rehab section)
- 3' metal straight edge
- sash chain and fixtures

Exercise 8-E Dust Room Set-up, Sash Rehab, Plane Door Edge

Setup

The dust room will be setup as a model for an on-site dust room as well as a viewing room for the demonstration.

The optional size room is 14' by 16' or larger. This allows for an 8' deep viewing space and an 8' deep work space both 14' wide. This would allow about 14 people, two rows of seven or eight, at a viewing window.

The window wall can be constructed of 2x2s, 4' on-center pressure fit between a top and bottom plate. The bottom 4' of the viewing wall would be covered with 6 mil poly, the top with clear plastic purchased as a "storm window" (it comes with double sided tape). It is made taut with a heat gun or hair dryer. The corners may be reinforced by squares of stapled duct tape.

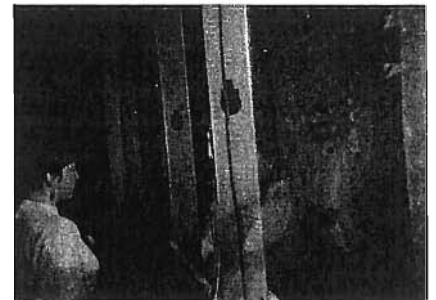
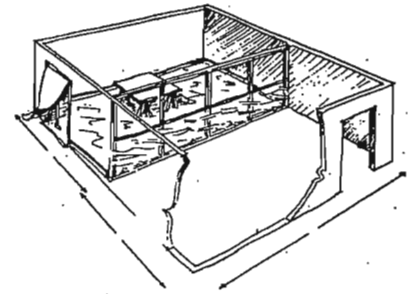
If there is a second entrance the double flap system can be installed over the door behind the wall. If not, an additional stud can be installed at one side of viewing wall creating an opening about 20" wide. A double flap system would be installed here.

The floor is covered with a layer of 6 mil poly taped to the baseboard.

A 4x4 piece of $\frac{3}{4}$ " plywood board is screwed to a set of sawhorses as a work bench and a wide board is setup on legs (or a long thin table) for a display of tools and supplies to be used.

The room should have a strong light source. Two reflector lamps on both sides of the viewing wall focused on the workbench works well. The room will need access to 3 or 4 grounded outlets and extension cords as necessary.

Build a door-hold for the door planing demo.



Teacher's Guide to Lead Paint in Historic Buildings

Exercise 8-E Continued

Demo-Door Repair

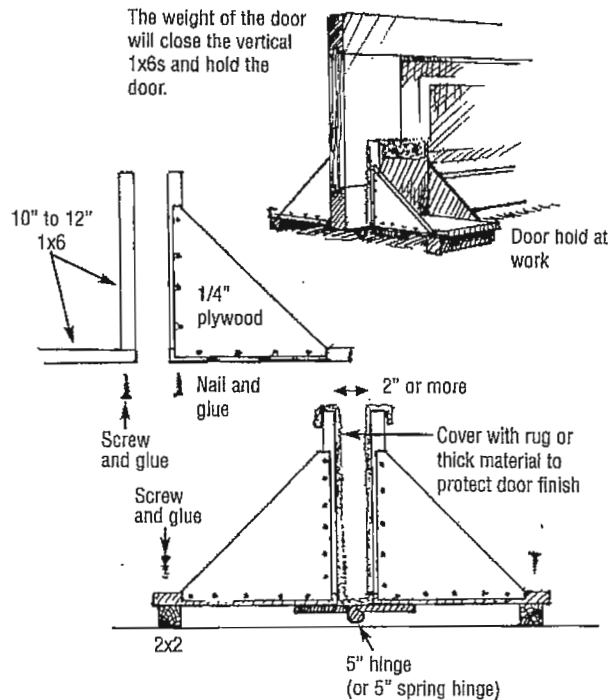
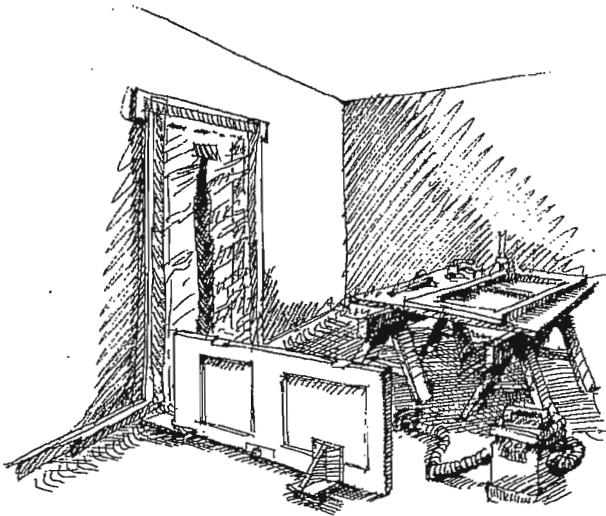


In dust room, demonstrate planing hinge edge of door. Use mist sprayer to reduce dust. Show door placement in door hold (door repair jig). Remove hinge leaf from door edge. Use a hand plane (or power plane with vacuum attachment) to plane paint off, treat edge and chamfer corners. Mist prior and during planing. Discuss hinge adjustment, repainting (particularly end grain and planed edge), See 8-13 to 8-14 in Training Manual.

Demo-Window sash stripping and repair

In dust room, wet-scrape (or power-plane or power-sand with a vacuum attachment) the window. Show how most sash outer edges are unpainted. Explain how the painted friction surfaces on window sash are minimal — usually a small $\frac{1}{2}$ " edge area on the face of the sash (just where sash meets the stop or jamb) and possibly at the meeting rails where the two sashes overlap. Discuss importance of painting the bottom of the bottom rail of the sash (an often unpainted area that wicks water). See pages 8-19 to 8-29 in the Training Manual

Optional Demos-Epoxy repairs to sash or reglazing. See pages 8-27 to 8-29 in the Training Manual



Exercise 8-F Walls and Ceilings

This demonstration's emphasis is on saving plaster walls, including damaged walls with some delamination. Drywall is a product with a much shorter life than plaster. It discourages mold and roach infestation, is more easily and inexpensively maintained and has historic value. Laminating drywall over plaster holds moisture — encouraging mold and roaches that feed off the drywall's cellulose and also creates reveal problems where it meets trim. Electric and plumbing can be run in walls without destroying plaster walls.

Veneer Plaster System

Where the plaster cannot be saved and replastering is over budget, a good option is veneer board. It can be single or double coated. At least two days before the workshop prepare 5 sample panels:

- preparing for veneer board installation
- veneer Board installed
- base coat
- finish coat over base
- finish coat as single coat

The finished panels are shown at the demo.

At this time explain how to laminate drywall over a severely damaged ceiling if plaster or veneer system can't be used.

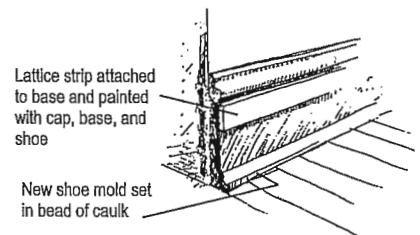
Mesh Wall Repair

Two days before the demo, a panel of damaged wall area is prepared. Holes and large cracks are filled flush to wall, a panel of undercoat, a panel of mesh, (one example of which is NU-WALL) and a panel of top coat over mesh is prepared.

During the demo one small panel 4' x 6' is installed to show cut-off at baseboard and cutting an overlapping seam to create a but joint.

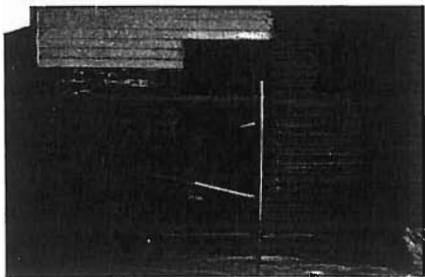
Baseboard Treatment

Add lattice board to baseboard, replace shoe mold, wet scrape, prime and paint a sample a few feet long. These protect baseboard from impact.



Teacher's Guide to Lead Paint in Historic Buildings

Exercise 8-G Exterior Setup, Siding and Trim



Setup

- Install 6 mil plastic on ground at demonstration area to extend 10' out in all directions from demo area.
- Curb edge on downwind end to capture dust/chips from blowing off poly.
- Attach to bottom edge of siding with staples through squares of duct tape at about 4' intervals
- If possible demonstrate safe ladder protocol including stand-off, tie-off and safety harness.
- At least 2 days (but preferably 4 days) before demo:

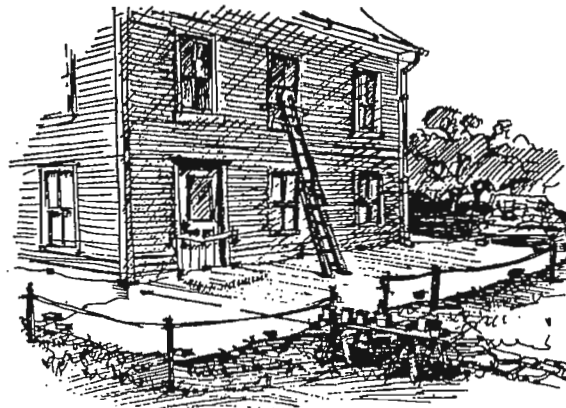
Prime several trim surfaces which display both varying levels of paint deterioration and different stages of paint preparation. Use encapsulant primer and topcoat system (Global Encasement or equal). Leave one area without the topcoat.



Trim Encapsulation Treatment

Demonstrate the use of abrasive pads and the wet scraping prep of balustrades and trim.

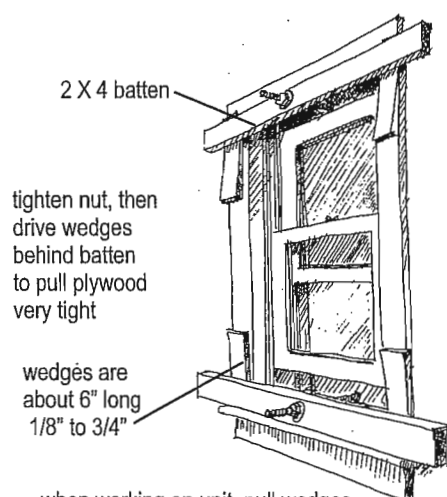
Demonstrate wet scraping prep of siding. In one demo square only remove weak or loose paint then feather with orbital vacuum assisted sander. For a second panel remove all paint by wet scraping and sand with vac-assisted orbital sander. Compare time.



Teacher's Guide to Lead Paint in Historic Buildings

Exercise 8-H Security System

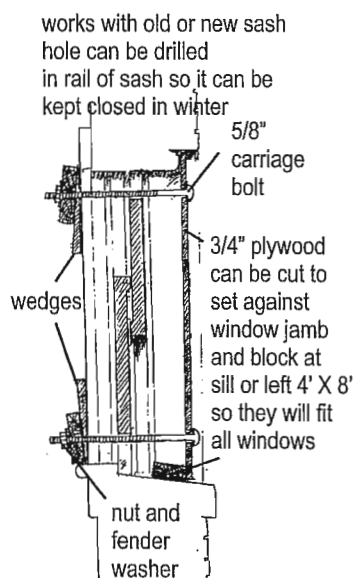
Securing historic sites is critical to stop vandalism and theft of historic components. It is also important to keep children out of a lead-contaminated sites. This is an optional demonstration which requires a double hung window. Hardware can be purchased locally.



tighten nut, then drive wedges behind batten to pull plywood very tight

wedges are about 6" long 1/8" to 3/4"

when working on unit, pull wedges, loosen nuts, open sash, turn batten and leave plywood hang open for light and ventilation



works with old or new sash hole can be drilled in rail of sash so it can be kept closed in winter

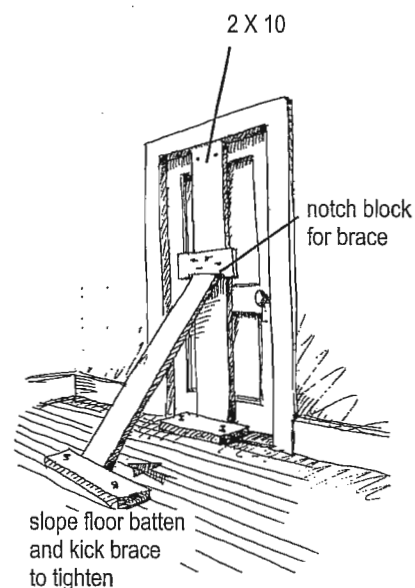
5/8" carriage bolt

3/4" plywood can be cut to set against window jamb and block at sill or left 4' X 8' so they will fit all windows

wedges

nut and fender washer

Back Door Brace



2 X 10

notch block for brace

slope floor batten and kick brace to tighten

Teacher's Guide to Lead Paint in Historic Buildings

9 SCHEDULING

Project scheduling integrates virtually all of the material presented in the course. Knowledge of lead hazards, preservation planning, site setup, dust control, work treatments, and cleaning come together during project scheduling to allow for cost-effective, lead-safe rehabilitation. Thoughtful planning can minimize the incremental cost of lead safety. For this reason, Chapter 9 is taught primarily through two interactive exercises.

Class Presentation

25 to 30 minutes

A discussion of scheduling for lead-safe rehabilitation should feature the following **Key Issues:**

- When generating dust, create the least amount of dust, exposing the fewest workers for the shortest possible time, in the smallest space.
- When working in occupied buildings, schedule work in phases to minimize the need for relocation.
- To the greatest extent possible, bundle dirty phases.
This accomplishes several purposes:
 - Consolidates the time workers will require respiratory protection. The less time workers are in respirators, the more productive they will be.
 - Minimizes the times when major cleaning will be required.
 - Shortens the period when full containment and isolation is required, ultimately improving site access.
- Work in close communication and cooperation with building owners and occupants during scheduling.

Teacher's Guide to Lead Paint in Historic Buildings

Exercise 9-A: Sequencing

Form: Small groups of 6 to 10

Where: Classroom, on long tables and the front or side wall

Props: Sequencing card sets. One set for instructor and one for each group.

Time: 25 to 30 minutes

Process:

1. The Instructor uses a set of cards made by copying the seven pages of "operations found on Appendices 6-12 ("Respiratory Containment," "Clean-Up," etc.) on to the heaviest stock the copy machine will take, then cutting them out. They are then taped to a sheet of rolled paper about 1 foot wide and 9 foot long, arranged according to the number on the bottom of each card, sequence A. Tape them on so they can be easily moved to another place on the roll of paper. For presentations in large rooms the cards would need to be blown up to double size and put on an 18 foot roll of paper, or a blank wall.
2. Ask participants to suggest where the "Wear Respirator in Containment," "Clean-Up," "Clearance Clean-up," and "Clearance Test" should go. It will probably look something like sequence B. Point out that having six periods where respiratory protection and clean-up are needed will have supervisors thinking that "we may as well have respiratory protection on the whole job." This, unfortunately, will usually result in 1) workers being very uncomfortable, 2) production and quality dropping, and/or 3) worker non-compliance (workers 'wearing' respirators on top of their head or around their neck).
3. Next, students move into groups of six to ten participants at separate worktables. Each group receives a complete set of cards made by copying appendices 6-12 onto either card stock or paper. Groups arrange their cards made by copying appendices 6-12 onto either card stock or paper as they appear on the front wall (something similar to sequence B.) Their next task is to re-sequence cards in an order that minimizes both the time respiratory protection is necessary and major clean-ups. Next the instructor can visit each group's worktable with the entire class, and explore their strategies, or go straight to full class discussion below.
4. The instructor changes the sequence in the front of the room based on participants' recommendations. Sequence C is one recommended outcome. Invite class input.

Teacher's Guide to Lead Paint in Historic Buildings

Sequencing

Sequence A

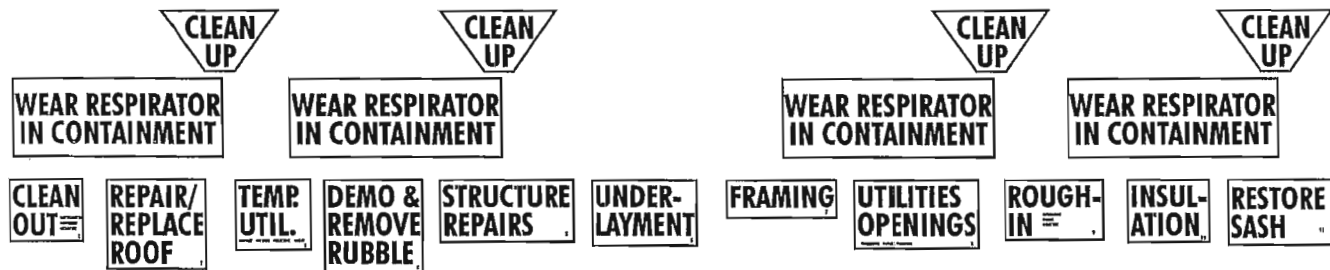
This is a fairly standard renovation sequence.

Assumptions: All paint and floor finish is assumed to contain lead. Except for plumbers, electricians and HVAC mechanics, the crew has lead certification.



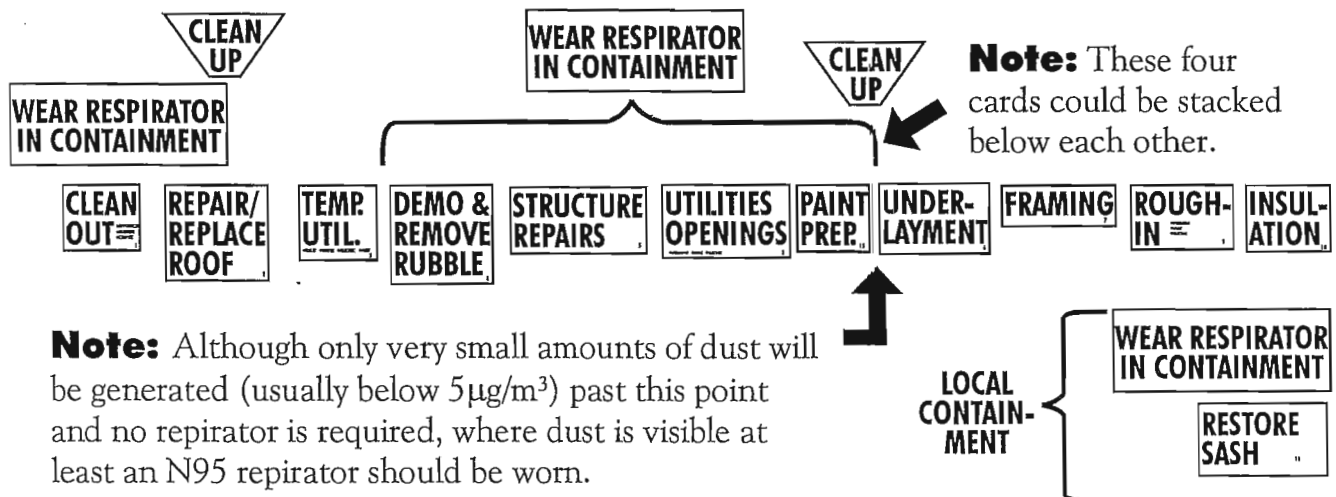
Sequence B

When the class is assigned to reorganize the work in a lead-sensitive manner, this is one probable solution. Their assignment includes adding the "Clean up, Wear Respirators in Containment, Clearance Clean up, and Clearance Test cards".



Sequence C

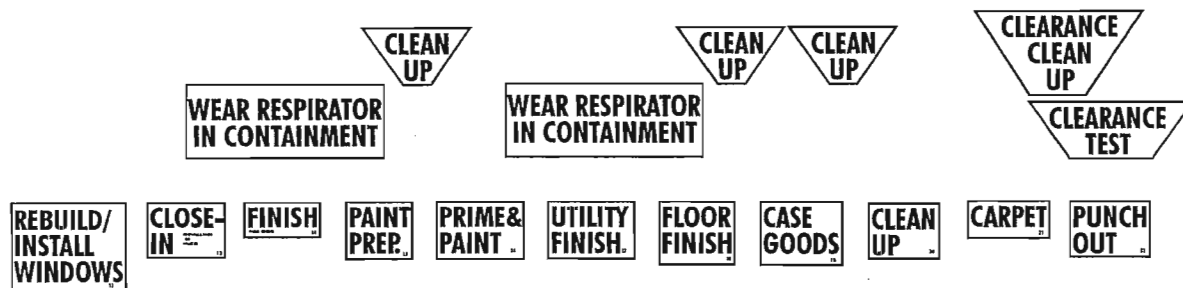
This is one possible sequence based on a critique of the above class solution. There are other possibilities.



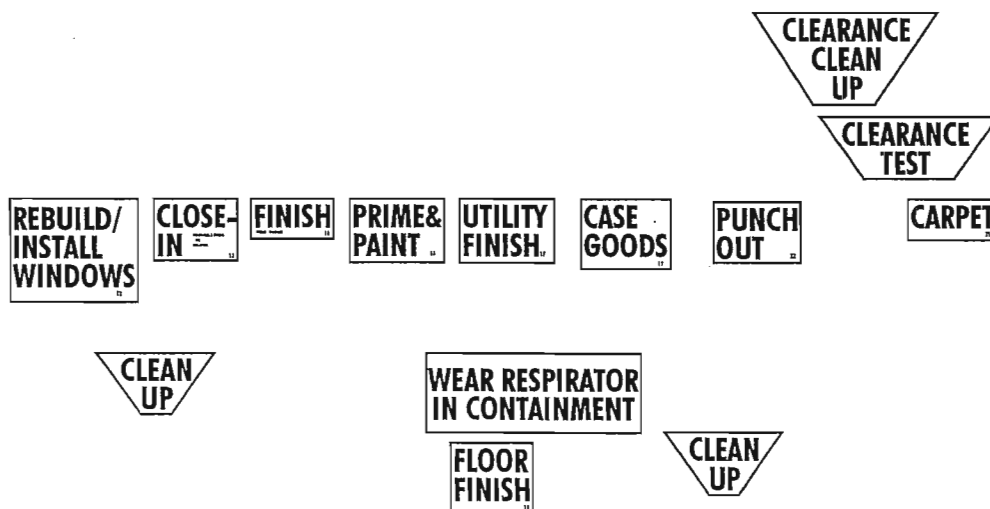
Note: Scope of Work this job could be for a large residential, small commercial or multi-family building. The assumption is that most interior trim and walls will be saved, but there will be areas of gut rehabilitation. The building has been abandoned and is full of trash.



Note: The difficulty of frequently setting up and breaking down containment (as well as respirators) would lead a supervisor to keep containment up for the entire job and the workers in respirators - a very poor solution.



Note: The floor must be clean before it is carpeted. The above sequence above would require the newly installed carpet to be removed for a clearance test. All punch out work should be complete



Student Handout Exercise 9-B

Exercise 9-B: Scheduling – Occupied Commercial Office

Form: 2 or 3 small groups

Where: Classroom, at desks

Props: Exercise handout 9-2, (4 pages)

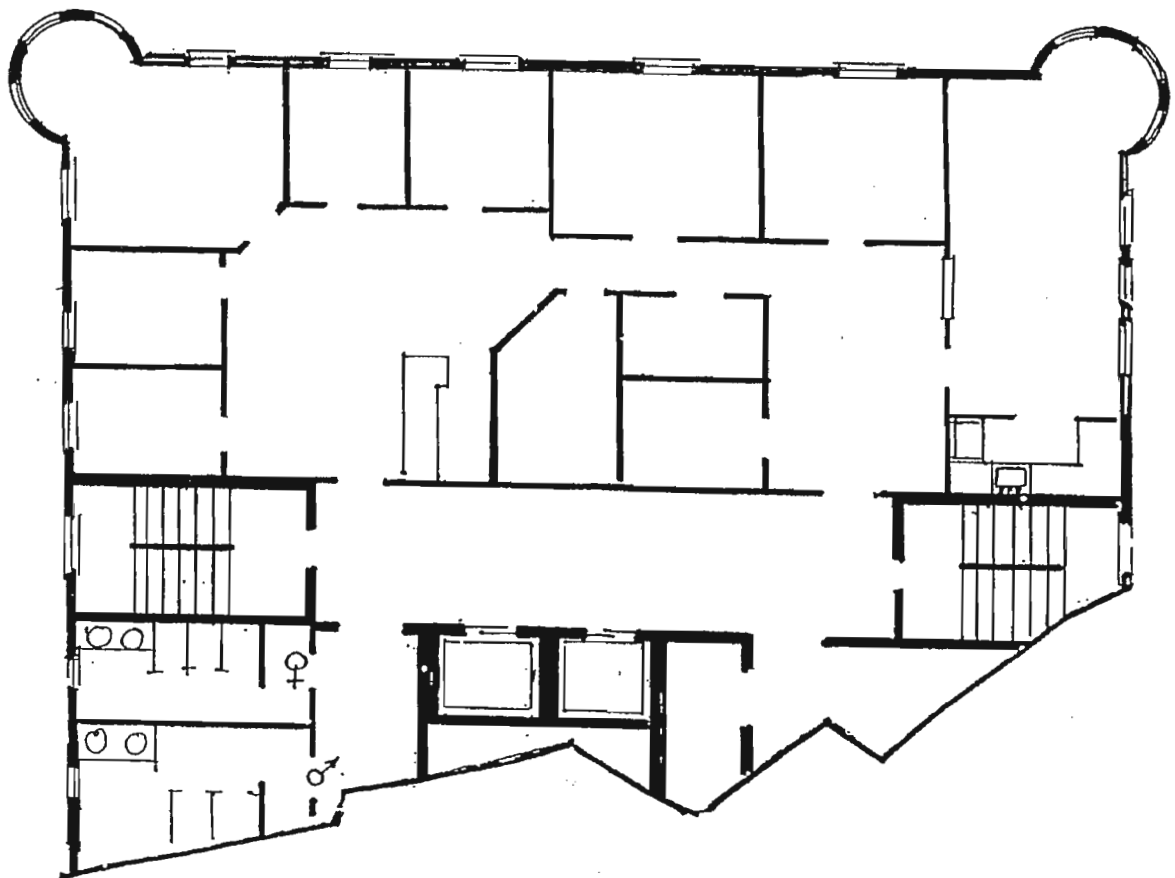
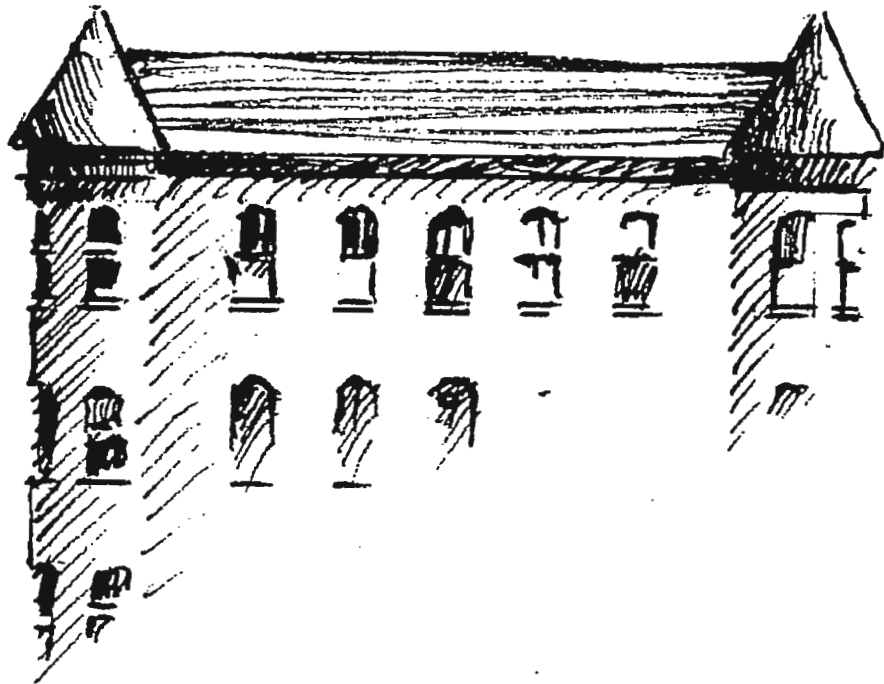
Time: 20 to 35 minutes

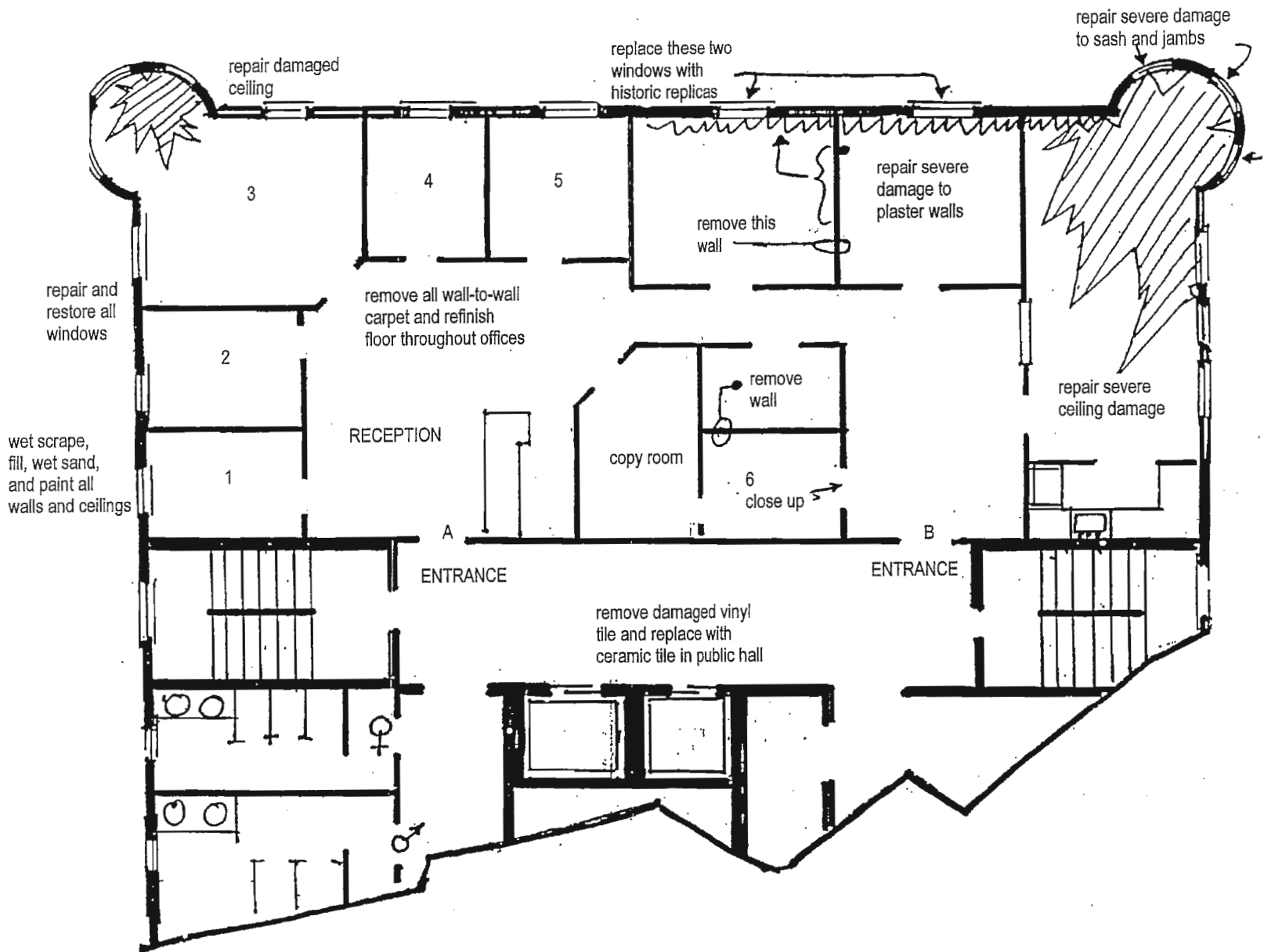
Process:

1. Instructor delivers handouts and provides instructions.
2. Appendix 13 of the handout provides an elevation sketch and floor plans for a turn of the commercial office building.
3. Appendices 14 and 15 of the handout provide a description of the building and the scope of work for the rehabilitation project. It provides instructions and a key for marking the floor plans.
4. Appendix 16 of the handout provide an additional sets of floor plans.
5. Class participants are instructed to schedule the project. Because the building is occupied, scheduling will require two or more phases. The project schedule should integrate all aspects of lead-safe rehabilitation, including containment, isolation, and worker and occupant access.
6. Upon completion, instructor projects an overhead of the floor plans, and opens the discussion of the planned schedule. Participants are encouraged to contribute their plan and justifications. Instructor can draw on the overhead to illustrate the approaches in an interactive exchange.

This exercise is similar to exercise 6- 7-B, but the level of complexity has been raised. Additional floor plans are provided to accommodate numerous phases within the schedule. As with the exercises in the previous chapters, it should be recognized that there is no particular “right” answer to this exercise. Several justifiable approaches may exist. The purpose of the exercise is to explore the fundamental of scheduling through an interactive class discussion.

Teacher's Guide to Lead Paint in Historic Buildings





Exercise 9-B 1 copy of this one

Instructions

Indicate up to 5 phases of work. This will not include exterior work. On each diagram indicate:

- Work Area-low dust



- High dust area (demo/dust room)



- Isolation Wall



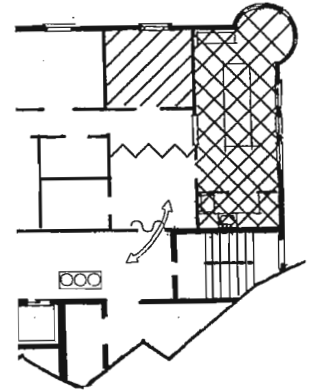
- Containment barrier



- Worker access



- Adjacent area

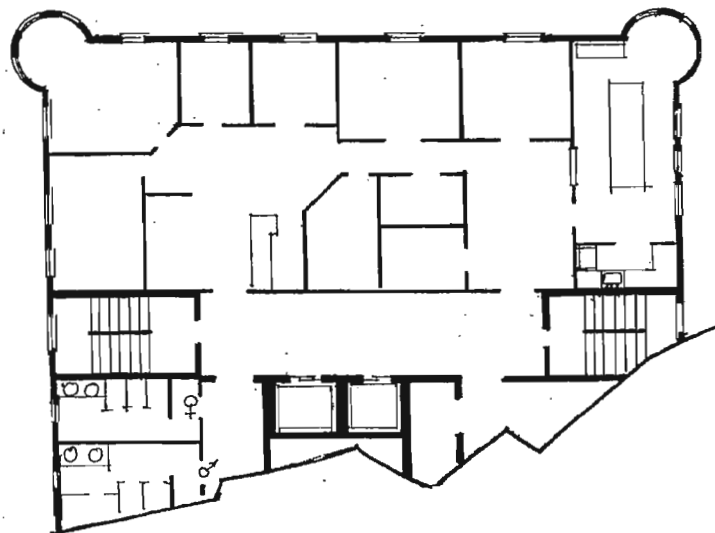
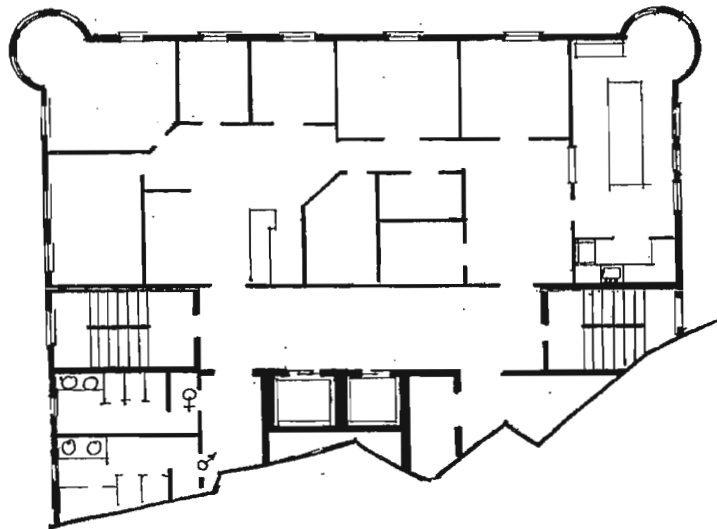
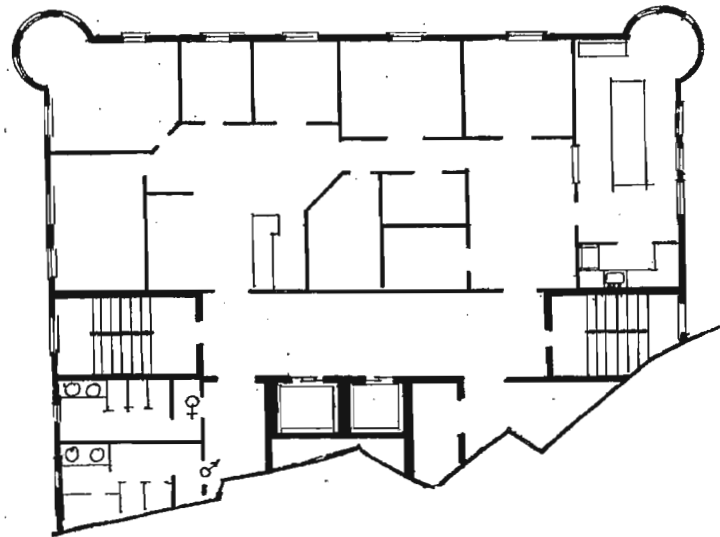


List specific work at each stage. For example:

- Remove wall, cap elec., patch, finish, paint
- Remove carpet, sand floor, finish floor
- Restore all windows marked with an X

Indicate projected number of days for each operation

Exercise 9-B 2 copies of this one



10 ON-GOING MAINTENANCE

Chapter 10 deals with maintenance issues following rehabilitation. This topic is essential for the following reasons:

Key Issue: The Lead-Safe Rehabilitation Training has centered on the retention of historic materials, and lead-safety through an “in-place management” approach. This approach is cost-effective, sensible, and compatible with the ideals of preservation. It is also an approach that requires a heightened commitment to ongoing maintenance. Whenever lead paint remains in a building, a recurrence of lead hazards can be avoided through dedication to maintenance activities.

Key Issue: Central to historic preservation is the principle of “least intervention.” Ongoing maintenance can be considered the purist form of preservation, as it imposes the least intervention on a building.

While the maintenance issue is essential, the topic can be covered rather quickly. The techniques associated with performing maintenance activities safely are identical to lead-safe rehabilitation. Little new material needs to be presented. Rather, the final chapter can serve as a brief review on the essentials of planning and execution.

Teacher's Guide to Lead Paint in Historic Buildings

Class Presentation

10 to 15 minutes (Pages 10-1 to 10-8)

A discussion of maintenance should include the following topics:

- Monitoring building conditions
- Training maintenance personnel
- Maintenance cleaning
- Performing maintenance repair activities
- Record keeping

APPENDIX—EXERCISE HANDOUTS AND OVERHEADS

EXERCISE 4-A

Dust Sampling Form	A-1
--------------------	-----

EXERCISE 6-A Site Setup

Site Setup Scenario	A-2
---------------------	-----

Site Setup Drawing	A-3
--------------------	-----

Exercise 7-B Dust Control

Dust Control Scenario	A-4
-----------------------	-----

7-B Drawing	A-5
-------------	-----

Exercise 9-A Sequencing

Sequencing cards masters	A-6 to A-12
--------------------------	-------------

Exercise 9-B Scheduling

Commercial Office Drawing	A-13
---------------------------	------

Commercial Office Drawing	A-14
---------------------------	------

Instructions	A-15
--------------	------

Commercial Office Drawing	A-16
---------------------------	------

Overheads to copy

Overhead Masters	A-17 to 30
------------------	------------

Teacher's Guide to Lead Paint in Historic Buildings

Exercise 4-A Dust Sampling - Page 1 1 form per participant

Street Address / Apt. Number: _____
 City, State, Zip: _____
 Owner Name: _____ Owner Phone Number: _____
 Occupant Name: _____ Occupant Phone Number: _____
 Are there children under seven years present? _____
 Is there peeling paint in the unit? _____
 If yes, how much and where? _____

Fax results to: _____
 Mail results to: _____

LAB: Please enter results
in this column

Check desired turn around time: 7 days _____ 3 days _____ 24 hours _____

SAMPLE NUMBER	IF COMPOSITE	NAME OF ROOM	BUILDING COMPONENT (floor, trough, stool, etc.)	DIMENTION OF SURFACE SAMPLED	CONDITION			LAB RESULT µg/ft'	ABOVE CLEARANCE
					SMOOTH ✓	ROUGH ✓	CARPET ✓		
1	a			" X "					
	b			" X "					
	c			" X "					
	d			" X "					
2	a			" X "					
	b			" X "					
	c			" X "					
	d			" X "					
3	a			" X "					
	b			" X "					
	c			" X "					
	d			" X "					
4	a			" X "					
	b			" X "					
	c			" X "					
	d			" X "					
5				" X "					
6				" X "					
7				" X "					
8				" X "					
9				" X "					
10				" X "					
11				" X "					
12				" X "					

As is dust test ☐ Post work dust test ☐

Total number of samples _____

Date of sample collection ____/____/____ Date Shipped to Lab ____/____/____

Shipped by _____ Results received by _____ Date ____/____/____

Signature

Signature

Community Resources, Baltimore Maryland - You may copy this form without permission.

Exercise 6-A Site Setup - Page 1 1 copy per participant

SCENARIO

This commercial building on Main Street has been abandoned for 2 years, and is now slated for restoration. The roof is damaged towards the back of the building, which caused severe water damage to the joists in that area. The building is full of trash. The building must be secured during the entire restoration.

SCOPE OF WORK

Exterior

- Repair and paint trim as necessary
- Restore all front windows
- Install steel security door at rear
- Strip and rehang side door
- Remove 1970's store front
- Install 1901 reproduction store front

Interior

- Sand and finish T&G floor
- Restore tin ceiling (replace 4 panels)
- Fix exterior walls
- Replace damaged joists in rear
- Install subfloors
- Frame out partition wall in rear as per plan
- Install new HVAC and electric systems
- Drywall, finish, paint
- Install tile and fixtures in bathroom
- Install finish carpentry

ASSIGNMENT

Place the following site setup requirements on the plan on the following page:

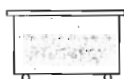
Adjacent (clean up)
Area -



Break Area -



Dumpster-



Dust Room -



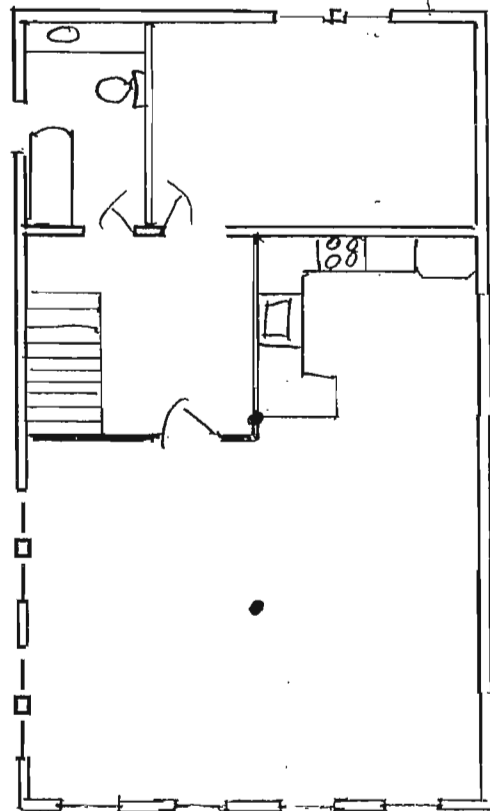
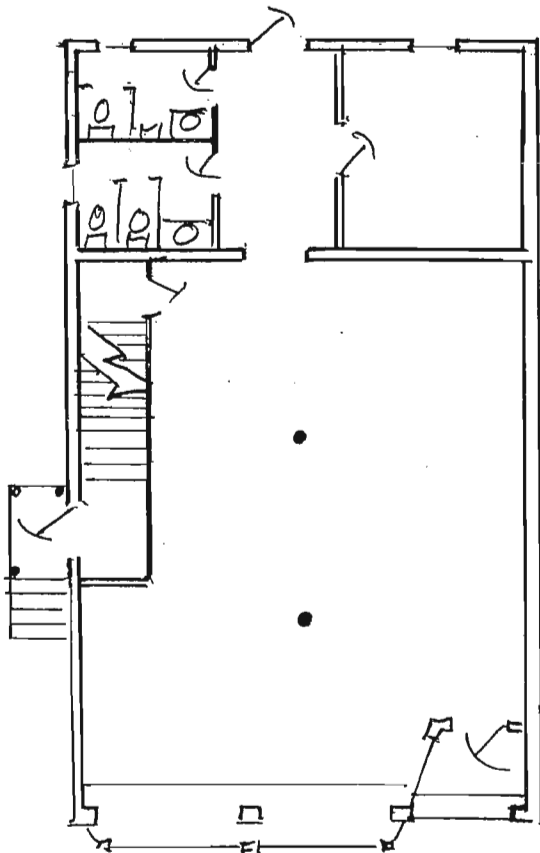
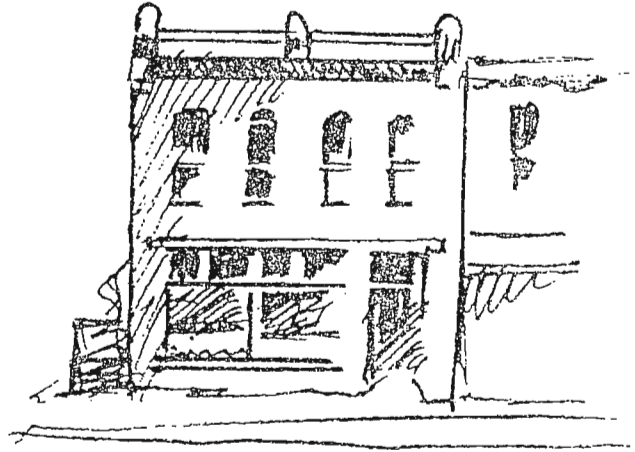
Storage Area -



If necessary, setup the plan in stages (you can use the floor plan on the first page, too) Be prepared to discuss your plan.

Appendix-2

Exercise 6-A Site Setup - Page 2 1 copy per participant



24'

Exercise 7-B Dust Control - Page 1 1 copy per participant

Scenario

A turn of the century residence is scheduled for rehab. The owners have two small children who share a bedroom. The work should be completed in less than one month. The family can arrange to vacate the house during the day, but that arrangement is difficult, and can occur only on a limited basis. The family can be out of the house for one or two nights but avoiding any relocation is preferred. The 2 parents and 2 young children can share a bedroom for 2 or 3 nights.

Scope of the Work

Repaint exterior including,

- Repair or replace trim elements as required.

Windows (restore)

- Remove and replace vinyl living room windows with wood reproductions
- Restore and repaint all other original sash

Interior (minor repairs)








- Patch, prime and repaint 1st floor
- Laminate drywall to water-damaged ceiling, 2nd floor rear
- Rehang 4 binding doors, 2nd floor

Kitchen (major remodel)

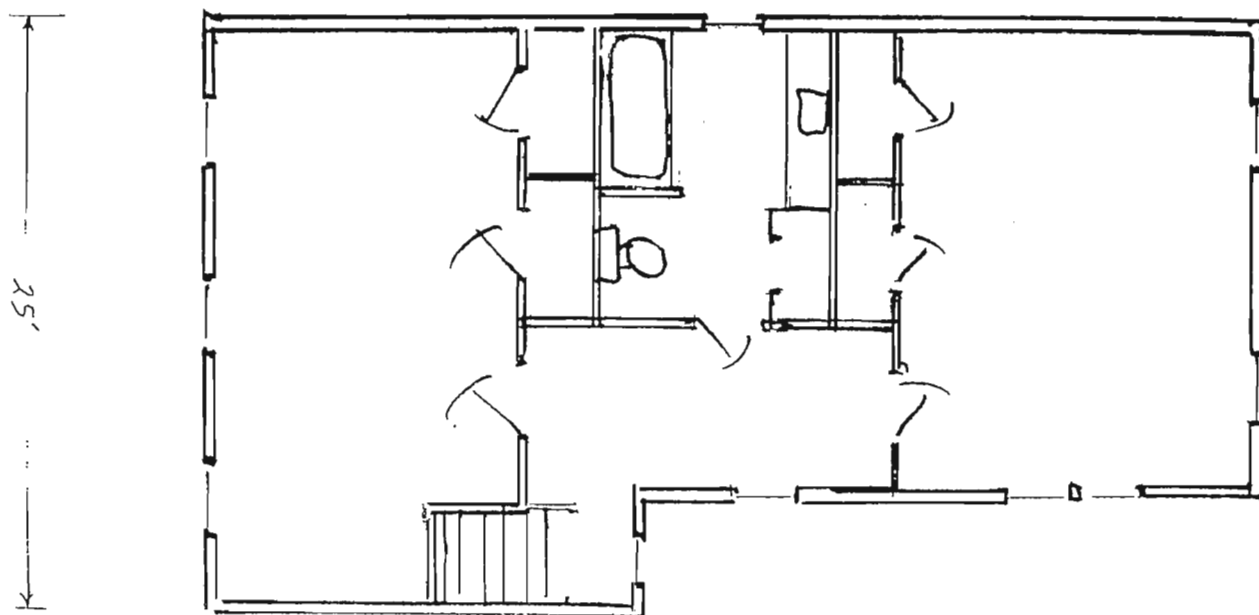
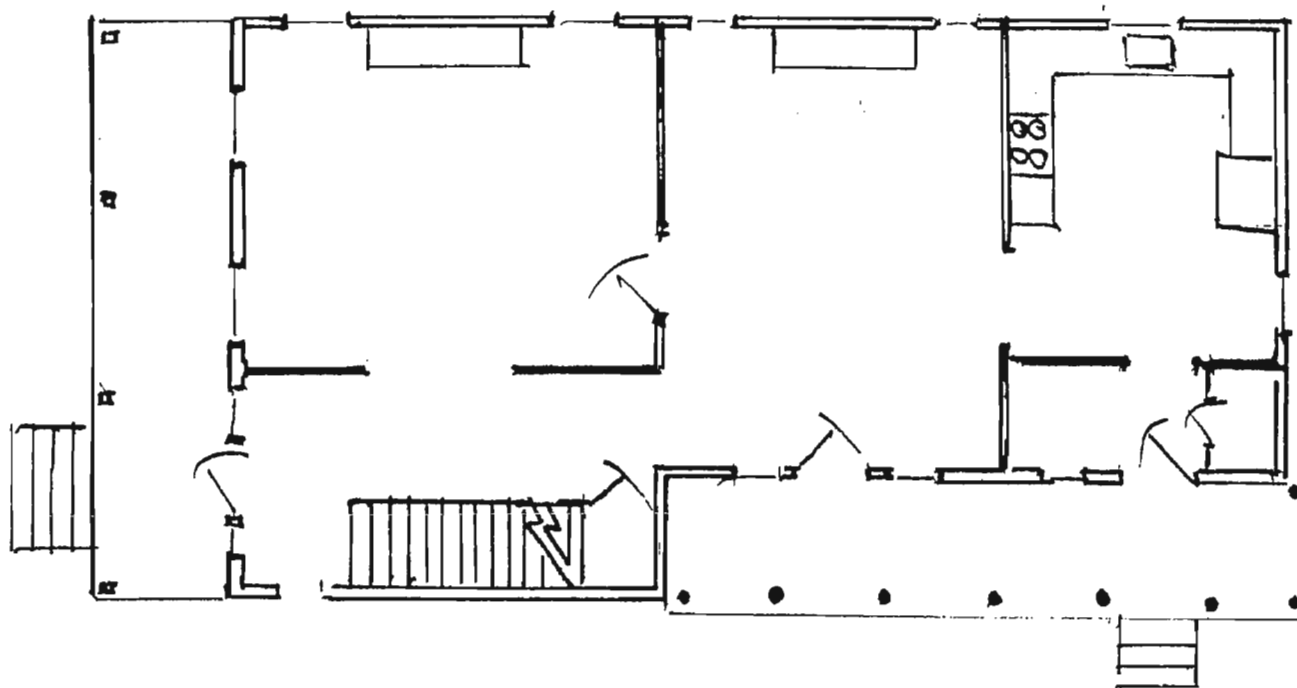
- Remove all appliances, cabinets and sheet goods
- Install wood T&G floor
- Install new upgraded electric
- Install new appliances and cabinets

Assignment

Perform an initial schedule of the residential rehab project. For each phase of the job, mark on the site plan the following dust control elements:

Low dust area		High dust area	
Containment Barrier		Isolation Barrier	
Worker Access		Resident Access	
Adjacent area			

Exercise 7-B Dust Control - Page 2 4 copies per participant



**WEAR RESPIRATOR
IN CONTAINMENT**





**DEMO &
REMOVE
RUBBLE**⁴

FRAMING⁷

**CLEAN
OUT**
•APPLIANCES
•RUBBISH
•CARPETS¹

**TEMP.
UTIL.**
•TOILET •WATER •ELECTRIC •HEAT³

**UNDER-
LAYMENT**⁶

**REPAIR/
REPLACE
ROOF**²

**PAINT
PREP.**¹⁵

**STRUCTURE
REPAIRS**⁵

UTILITIES OPENINGS

• PLUMBING • HVAC • ELECTRIC

8

INSUL- ATION

10

ROUGH- IN

• PLUMBING
• HVAC
• ELECTRIC

9

CLOSE- IN

• DRYWALL
• PLASTER

13

FINISH

• TRIM • DOORS

14

CARPET

21

**REBUILD/
INSTALL
WINDOWS**

12

**PRIME &
PAINT**

16

**UTILITY
FINISH**

17

**FLOOR
FINISH**

18

PUNCH OUT

22

CLEAN-UP

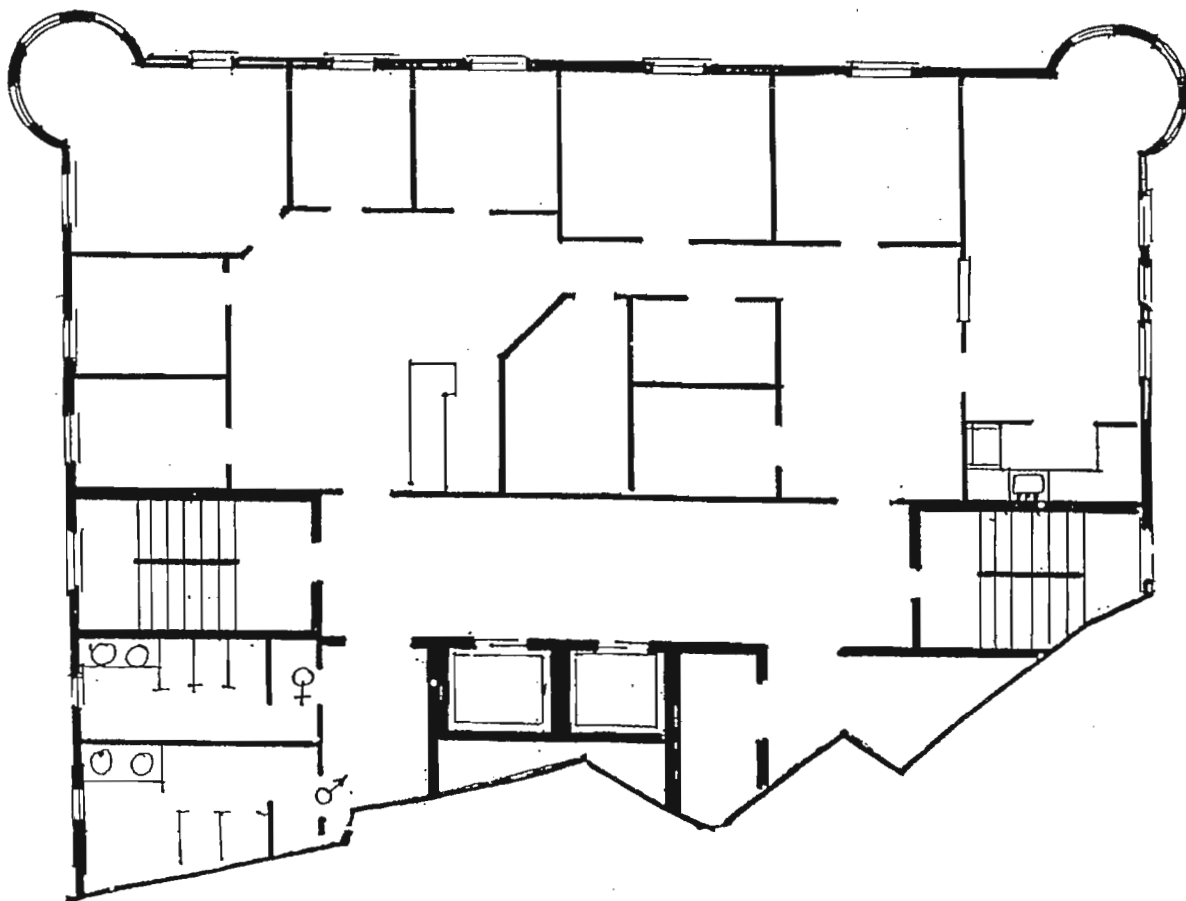
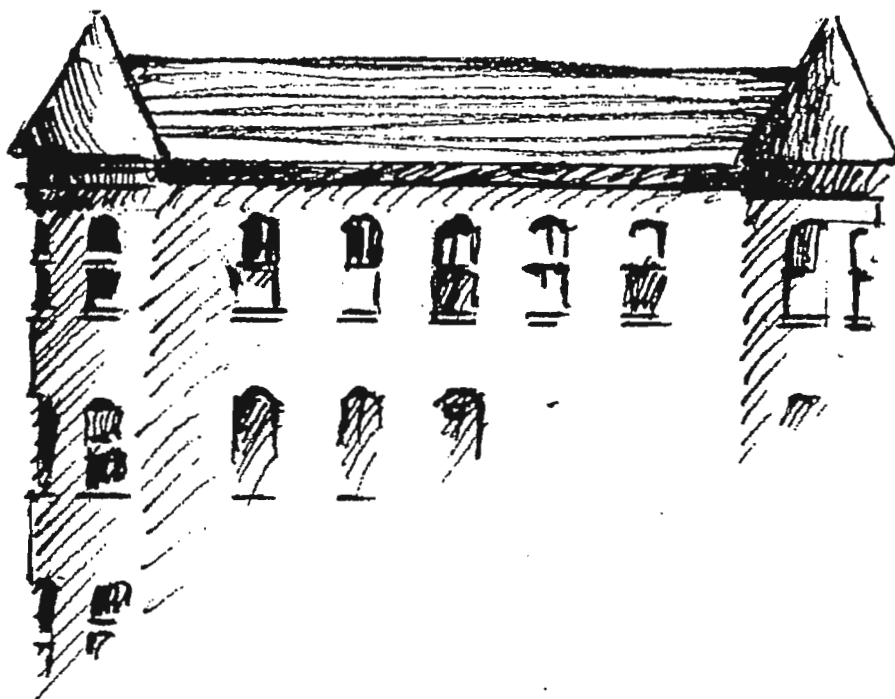
20

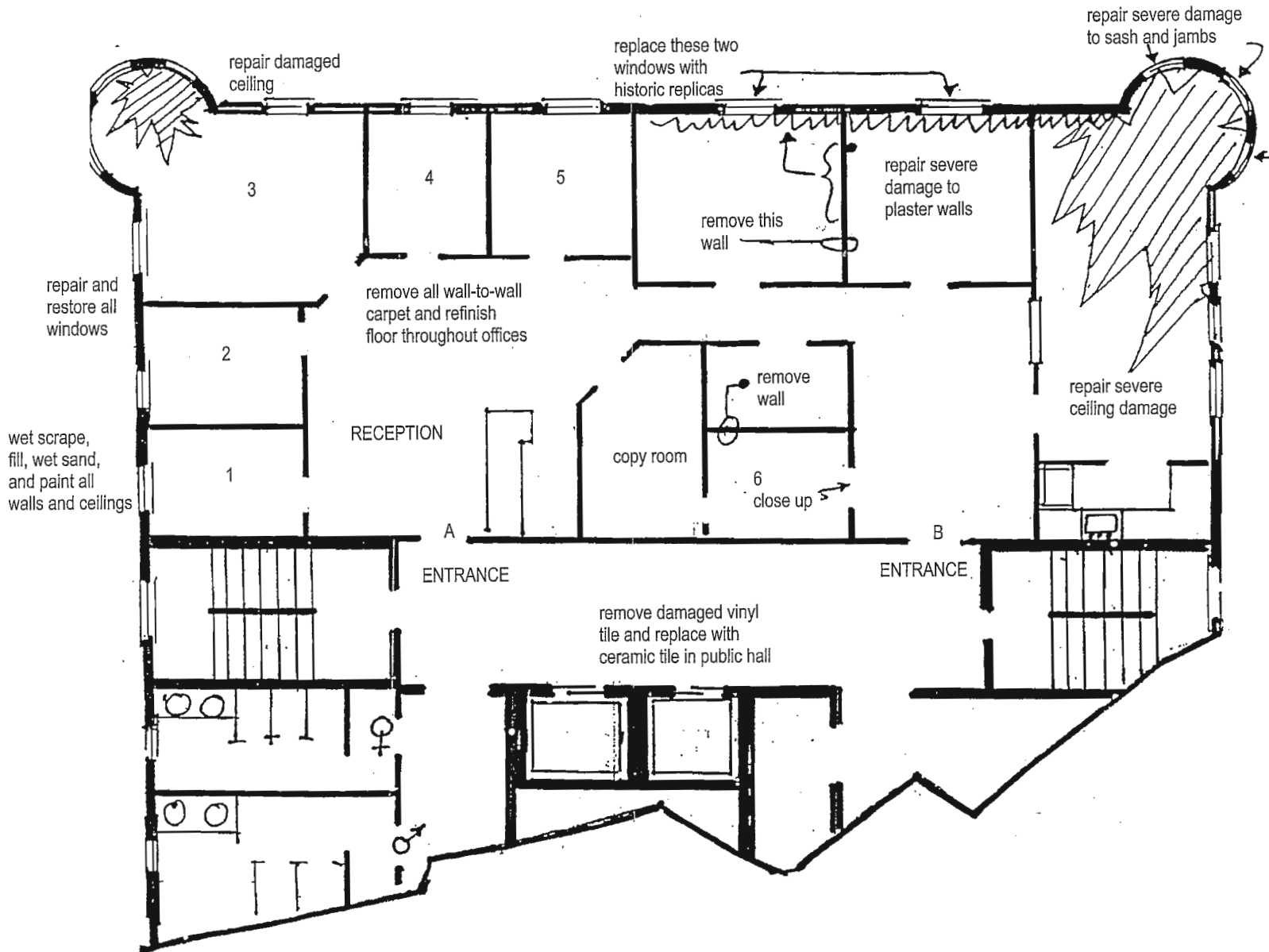
**CASE
GOODS**

19

**RESTORE
SASH**







12

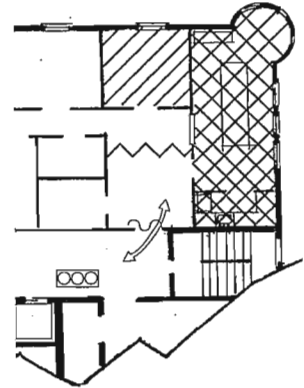




Instructions

Indicate up to 5 phases of work. This will not include exterior work. On each diagram indicate:

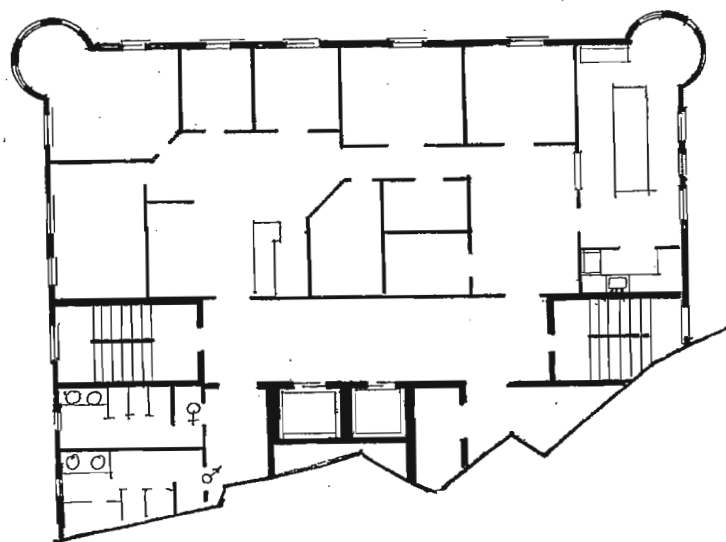
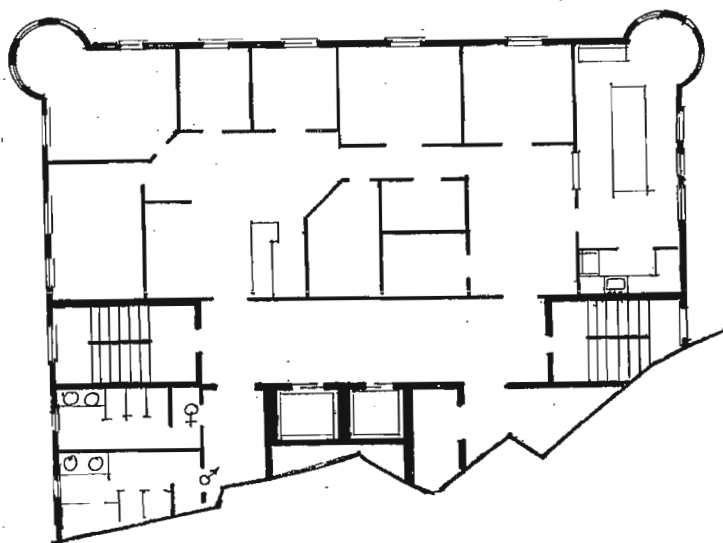
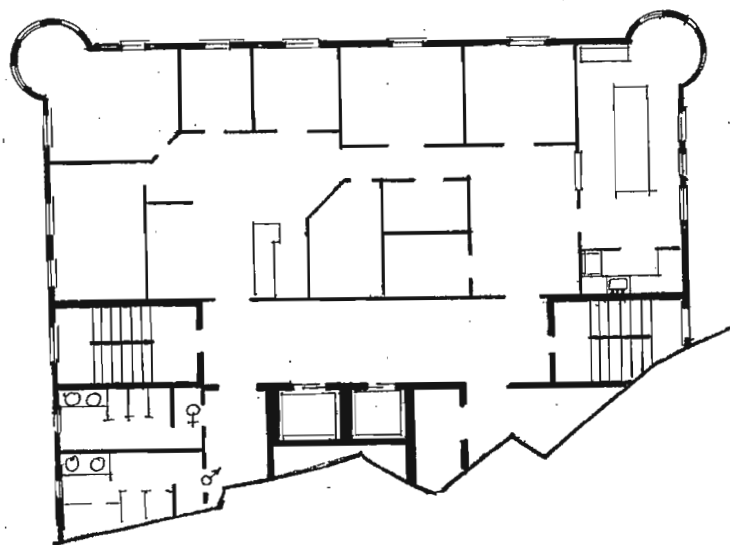
- Work Area-low dust 
- High dust area (demo/dust room) 
- Isolation Wall 
- Containment barrier 
- Worker access 
- Adjacent area 



List specific work at each stage. For example:

- Remove wall, cap elec., patch, finish, paint
- Remove carpet, sand floor, finish floor
- Restore all windows marked with an X

Indicate projected number of days for each operation



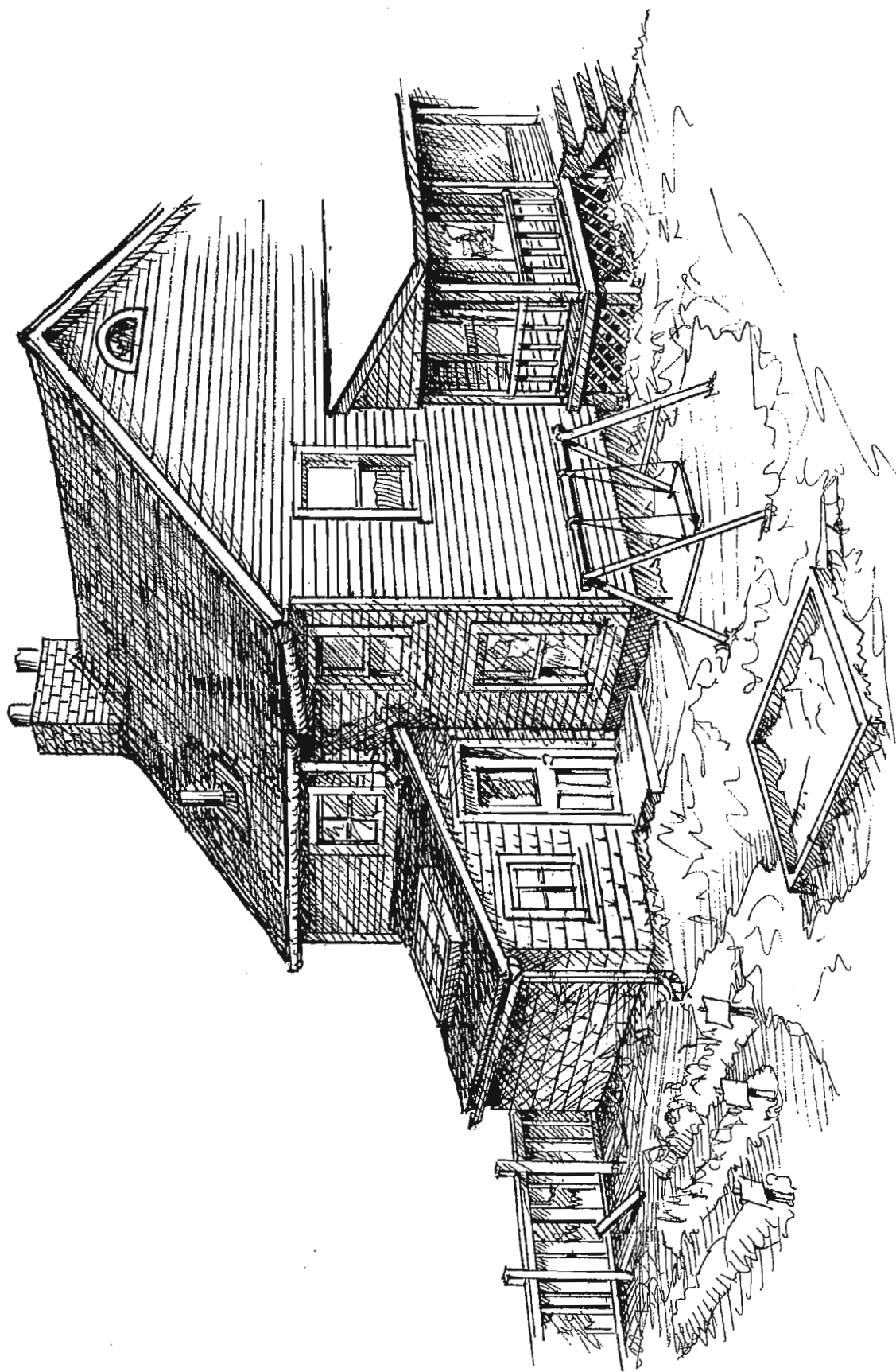
Teacher's Guide to Lead Paint in Historic Buildings

Overhead Transparencies

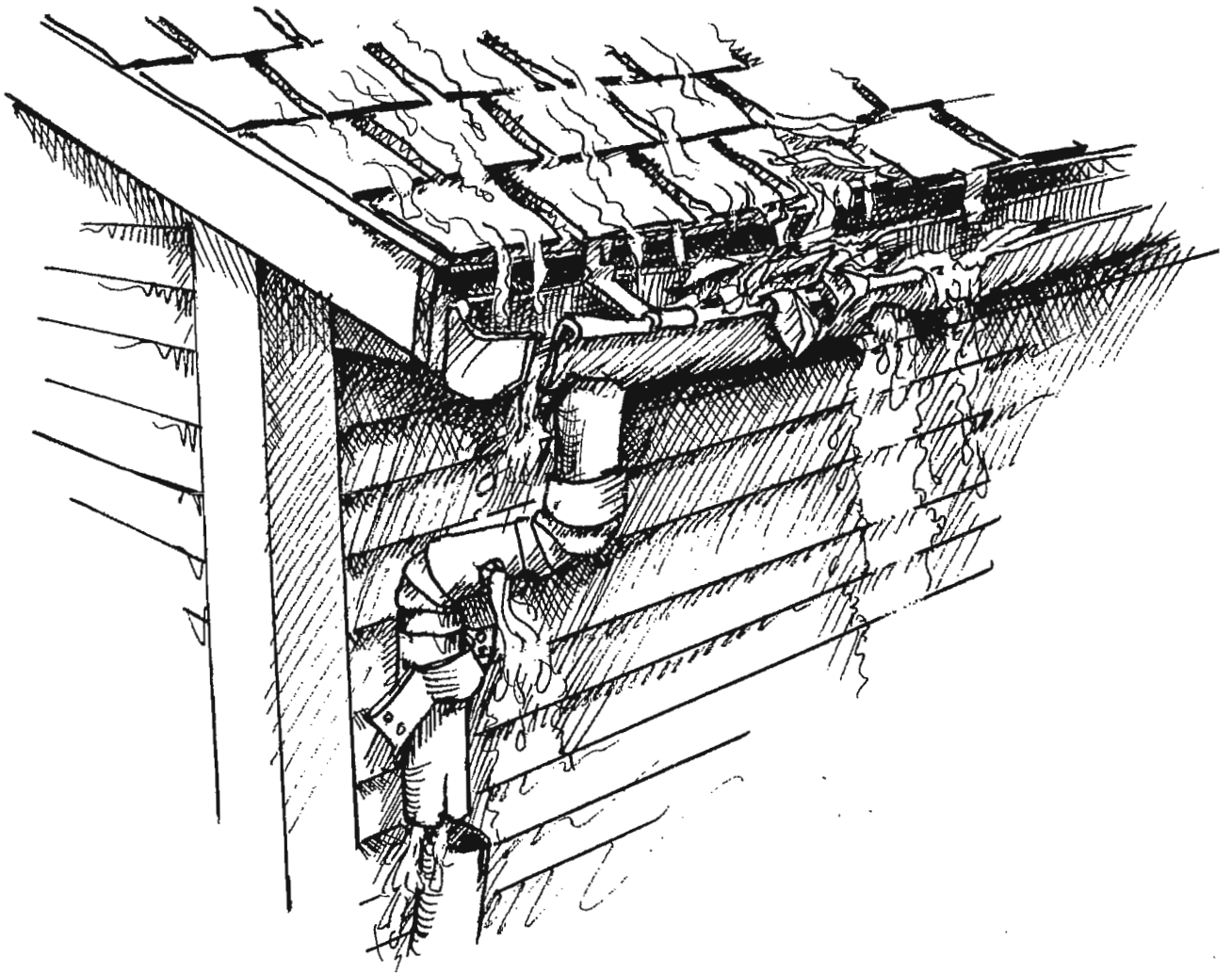
The artwork on the following pages—Appendices numbers 18-30 are designed to be xeroxed onto overhead transparency film to use with an overhead projector during classroom instruction of Chapter 3.

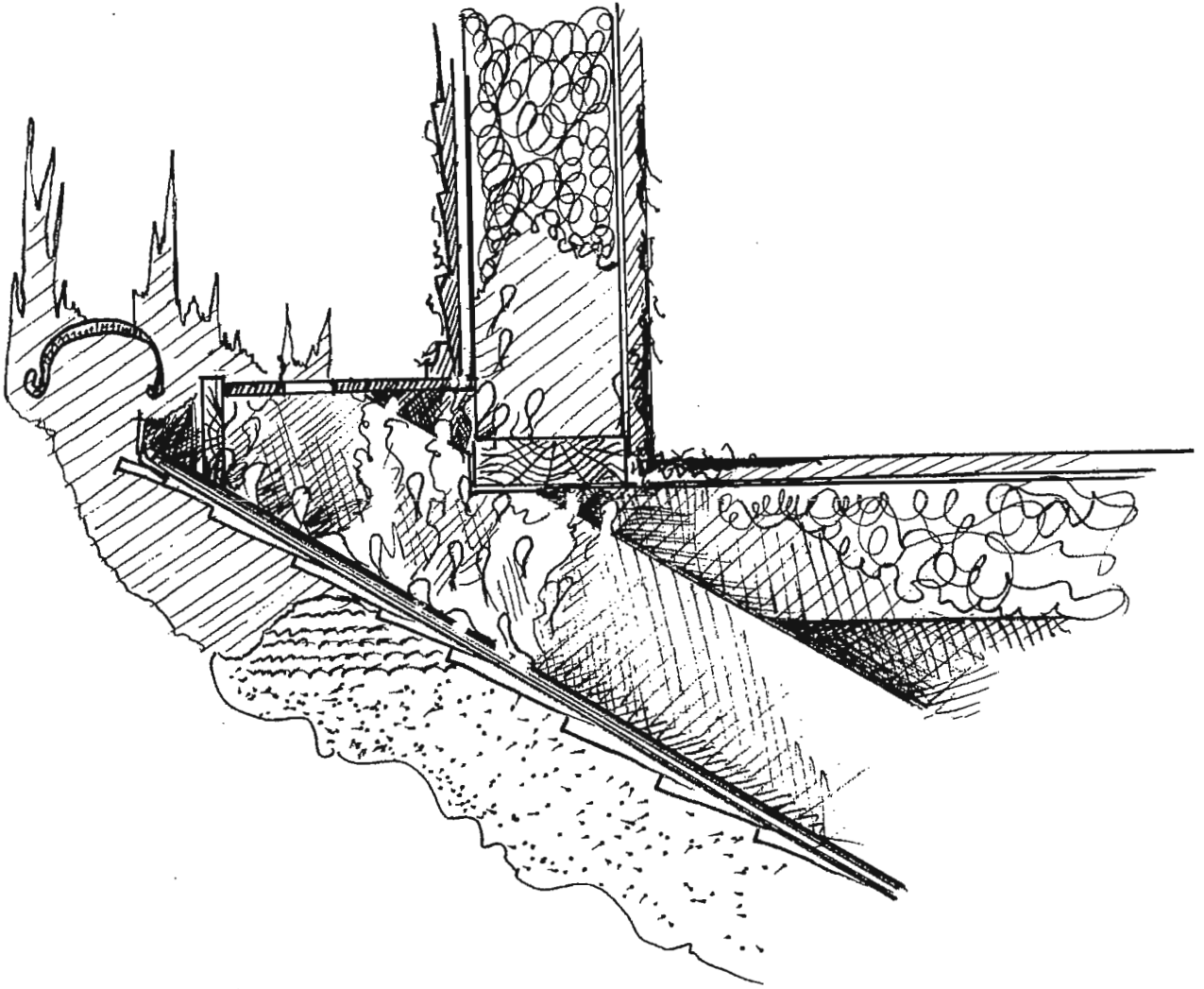
Appendices 1, 3, 5, 13, 14, and 15 are also useful as overhead transparencies for the exercises.

Transparency

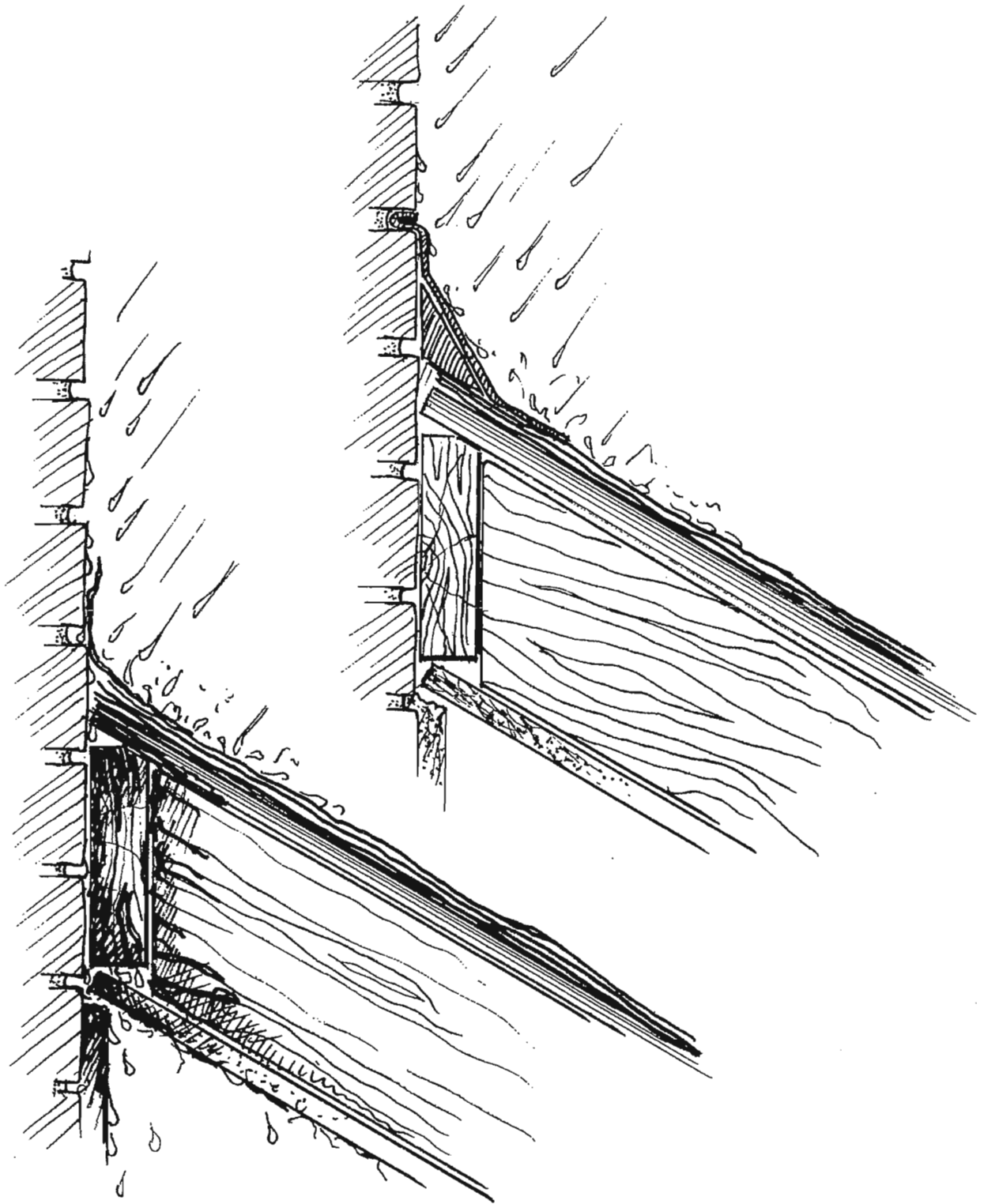


Teacher's Guide to Lead Paint in Historic Buildings

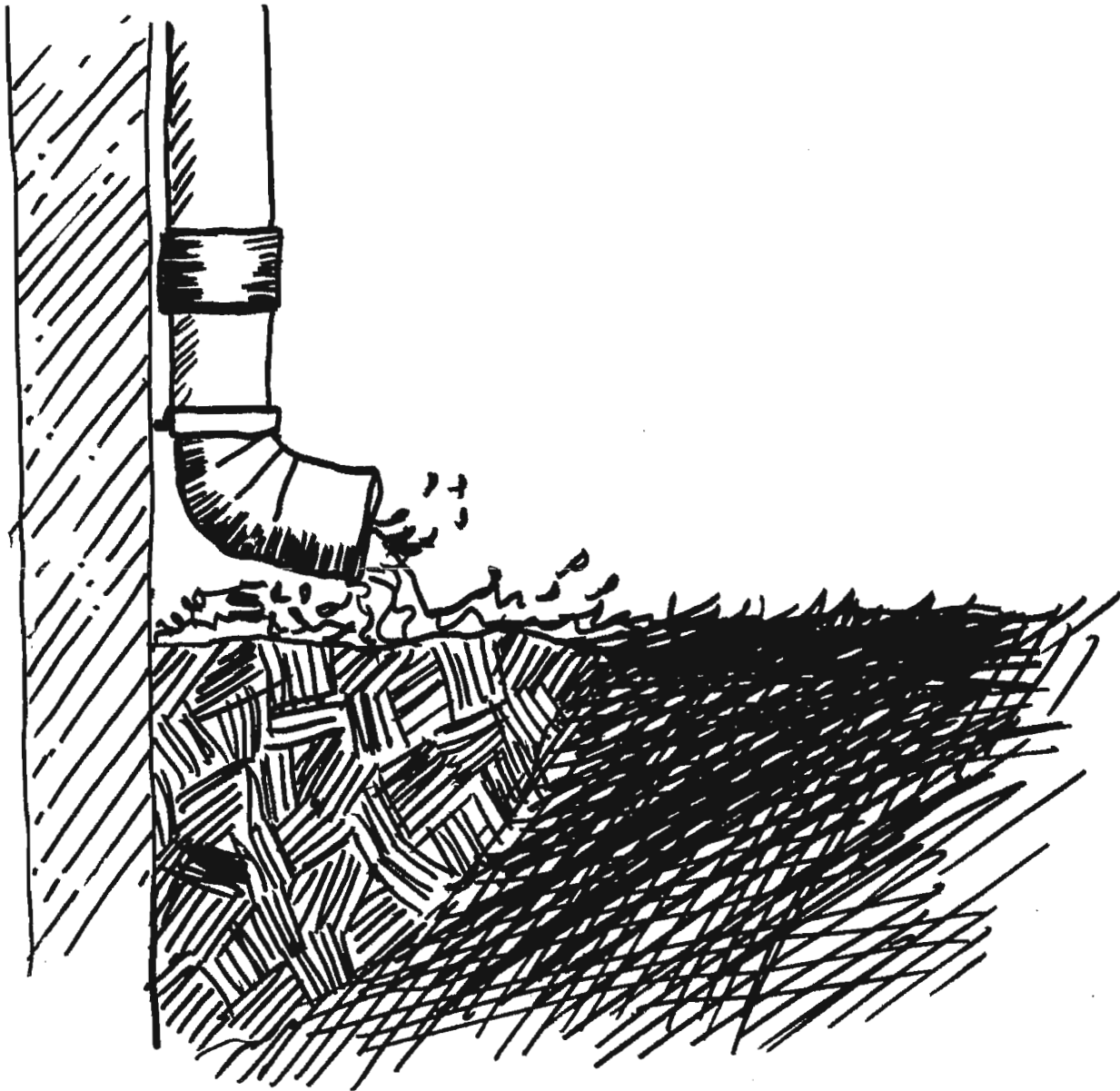




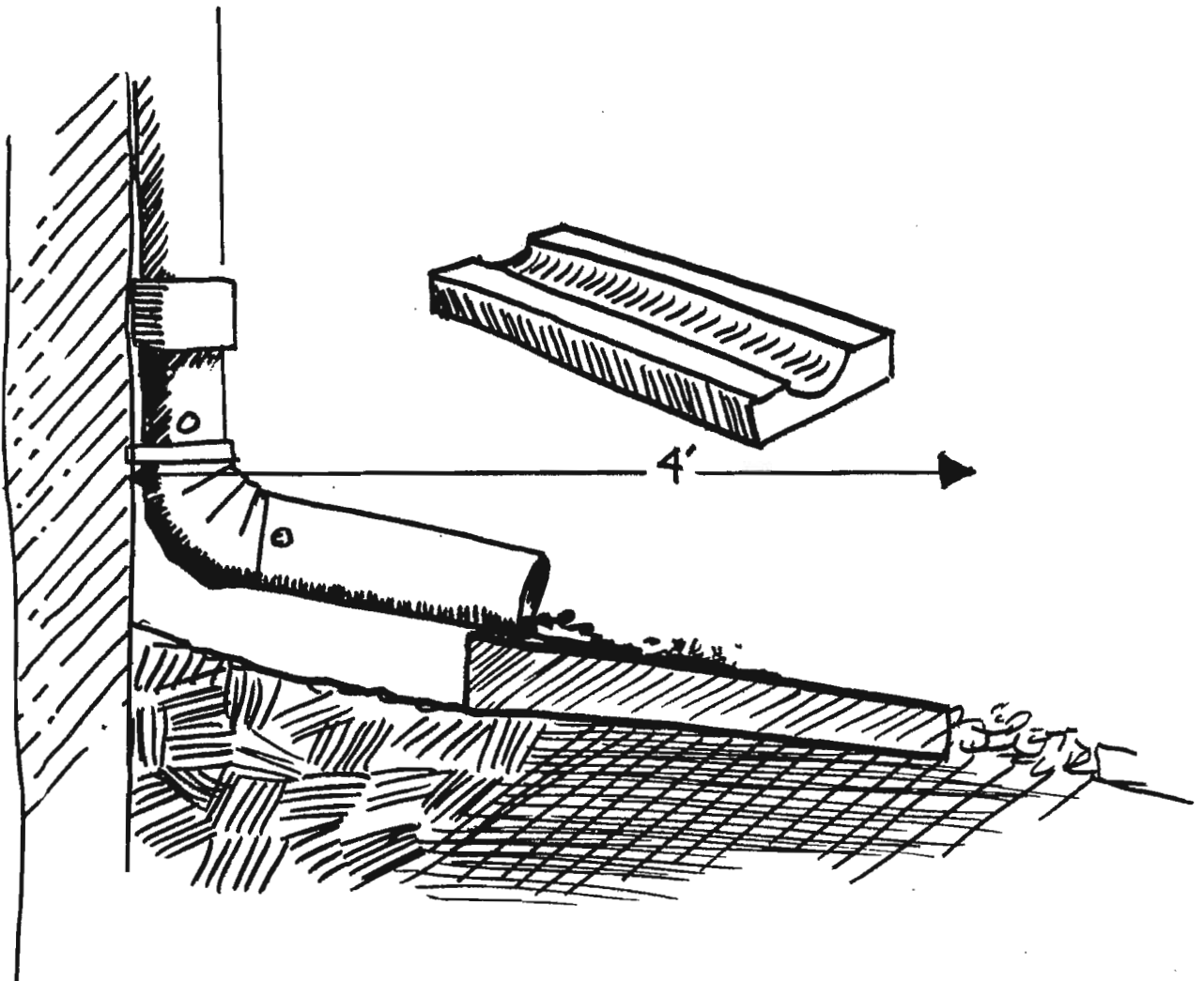
Teacher's Guide to Lead Paint in Historic Buildings



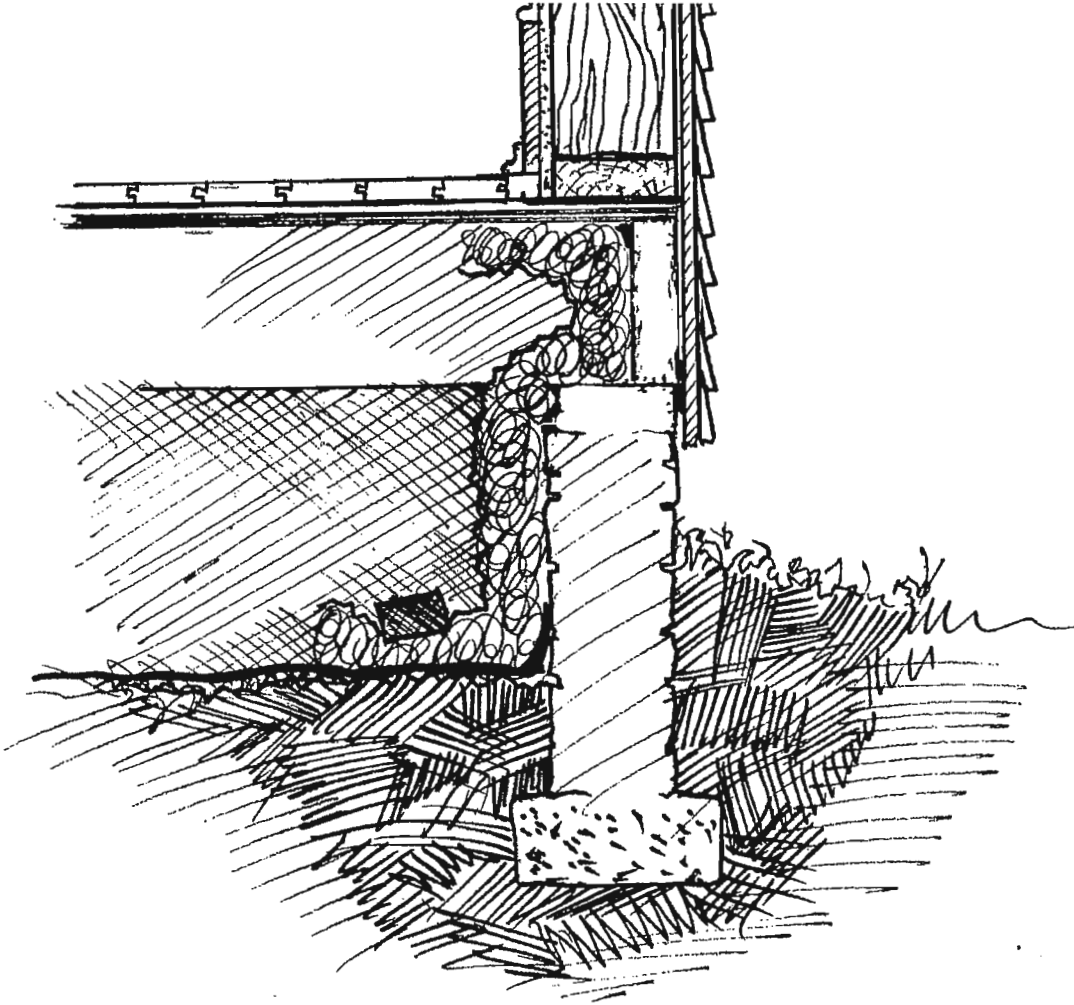
Teacher's Guide to Lead Paint in Historic Buildings



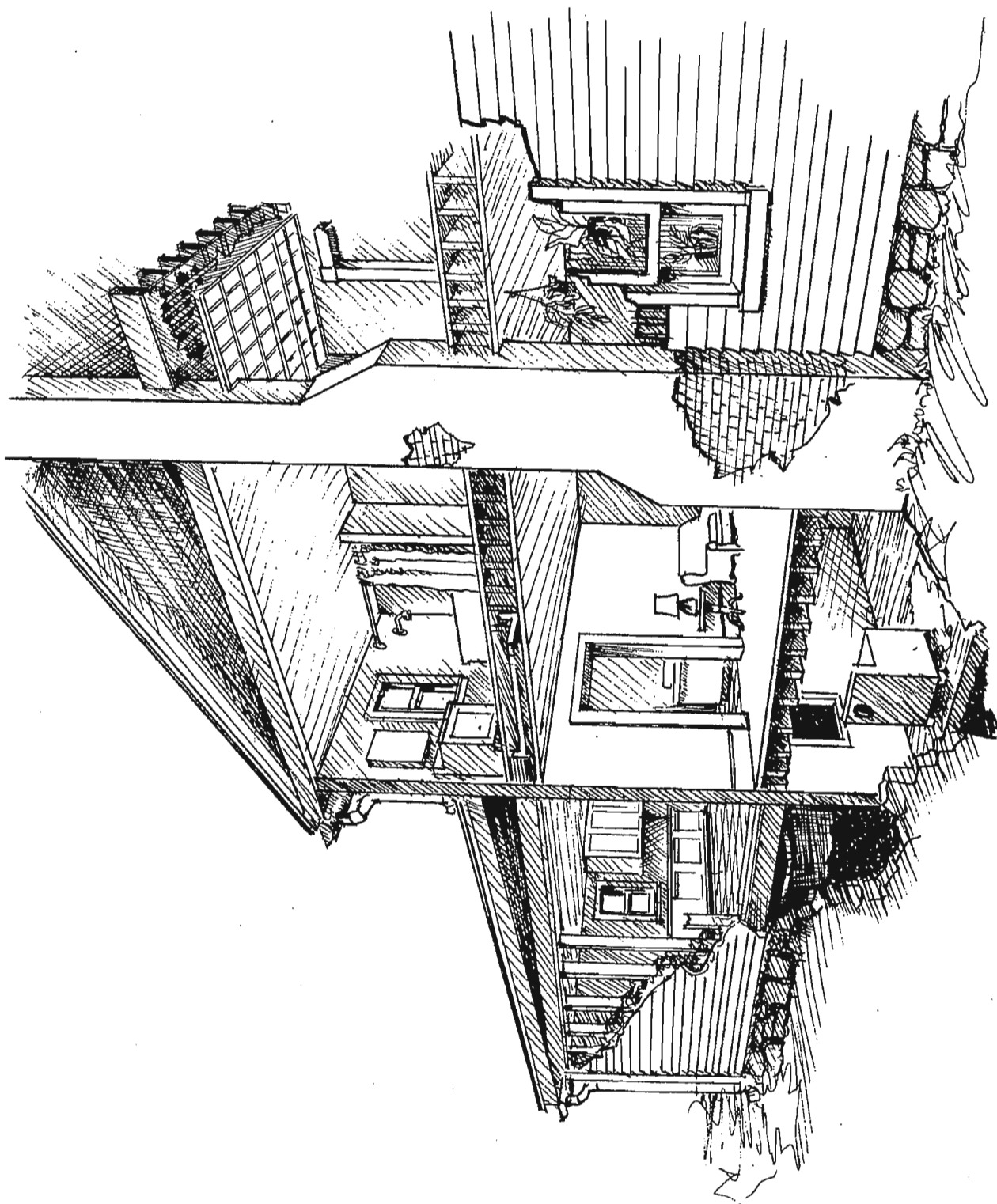
Teacher's Guide to Lead Paint in Historic Buildings



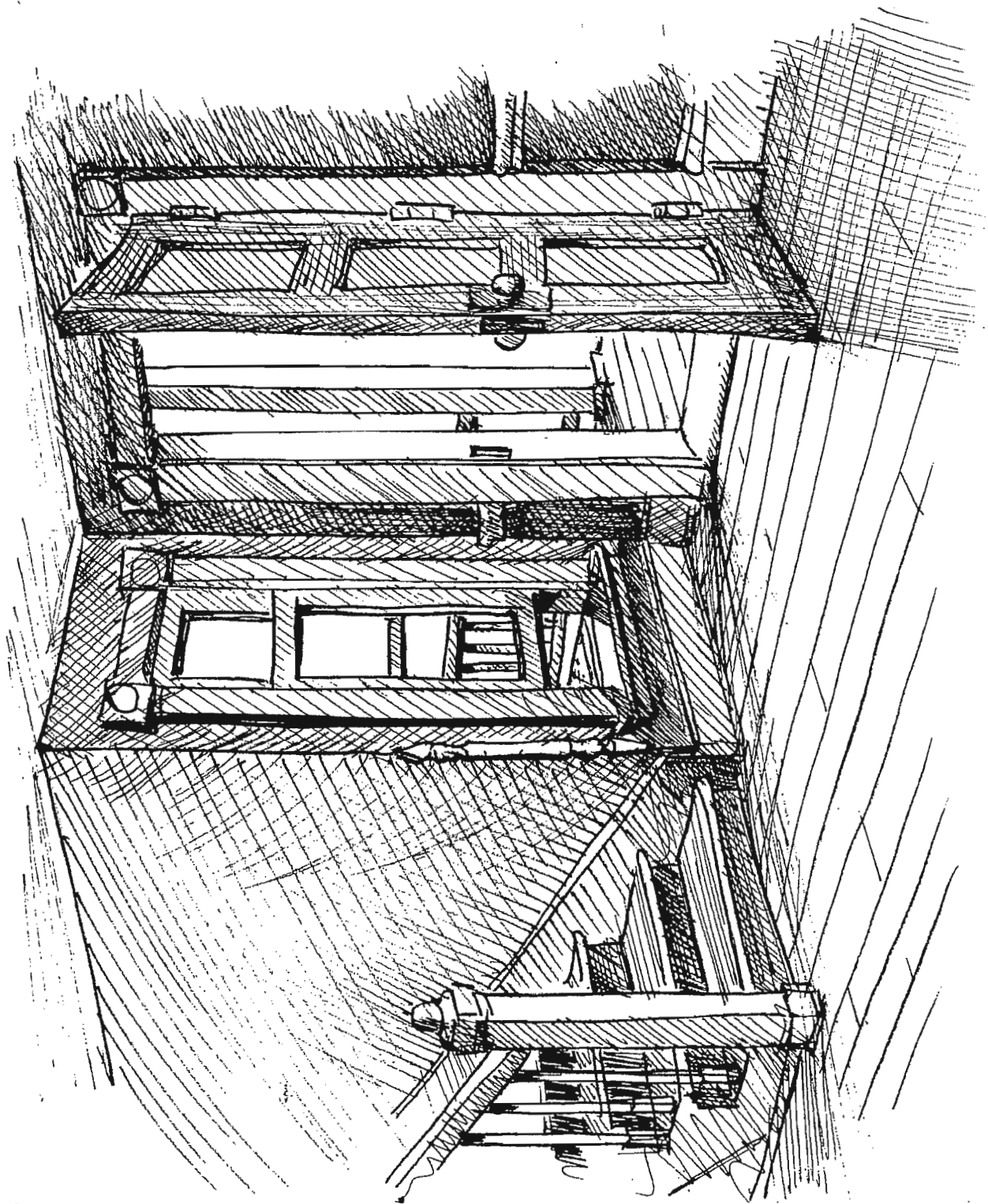
Teacher's Guide to Lead Paint in Historic Buildings



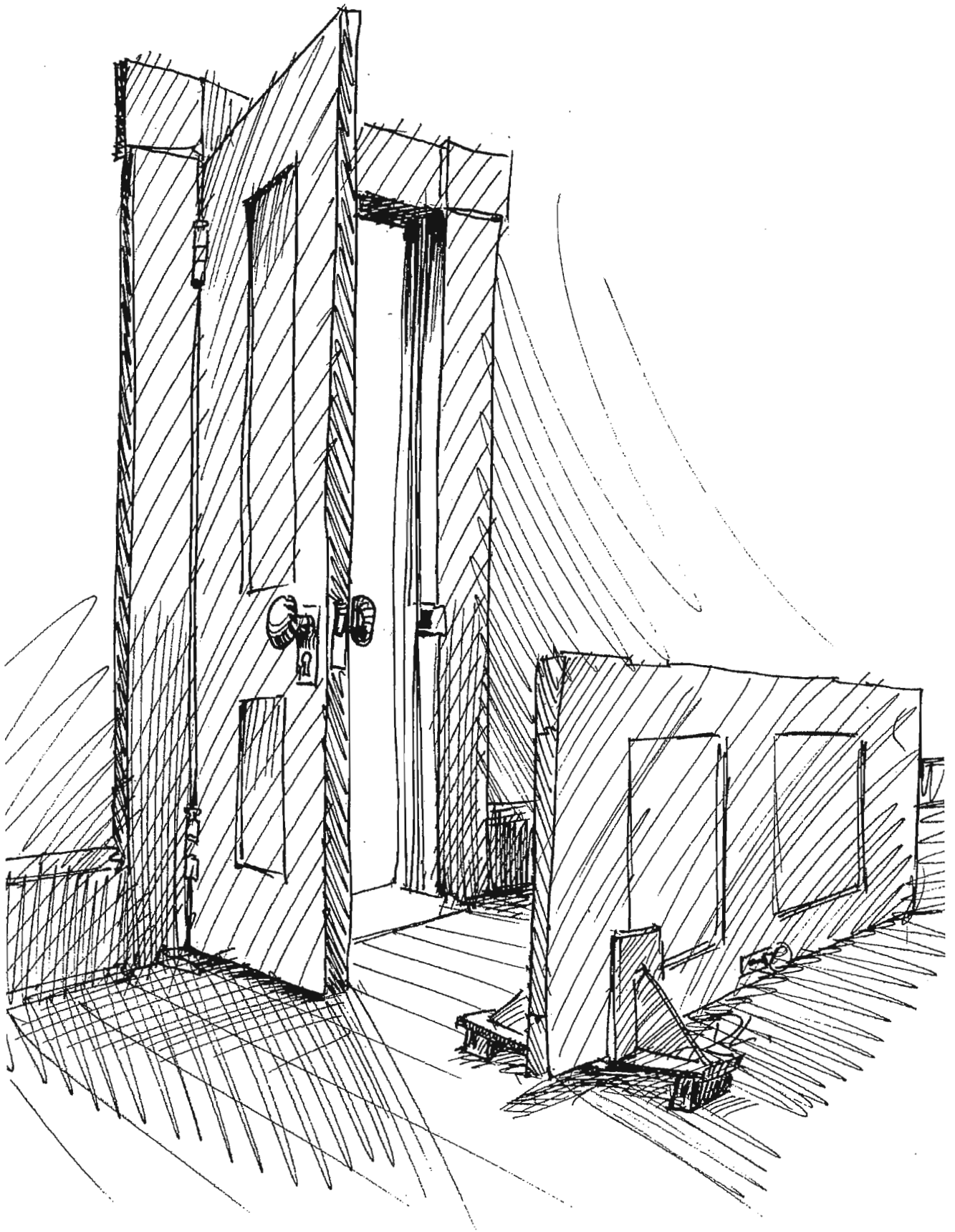
Teacher's Guide to Lead Paint in Historic Buildings



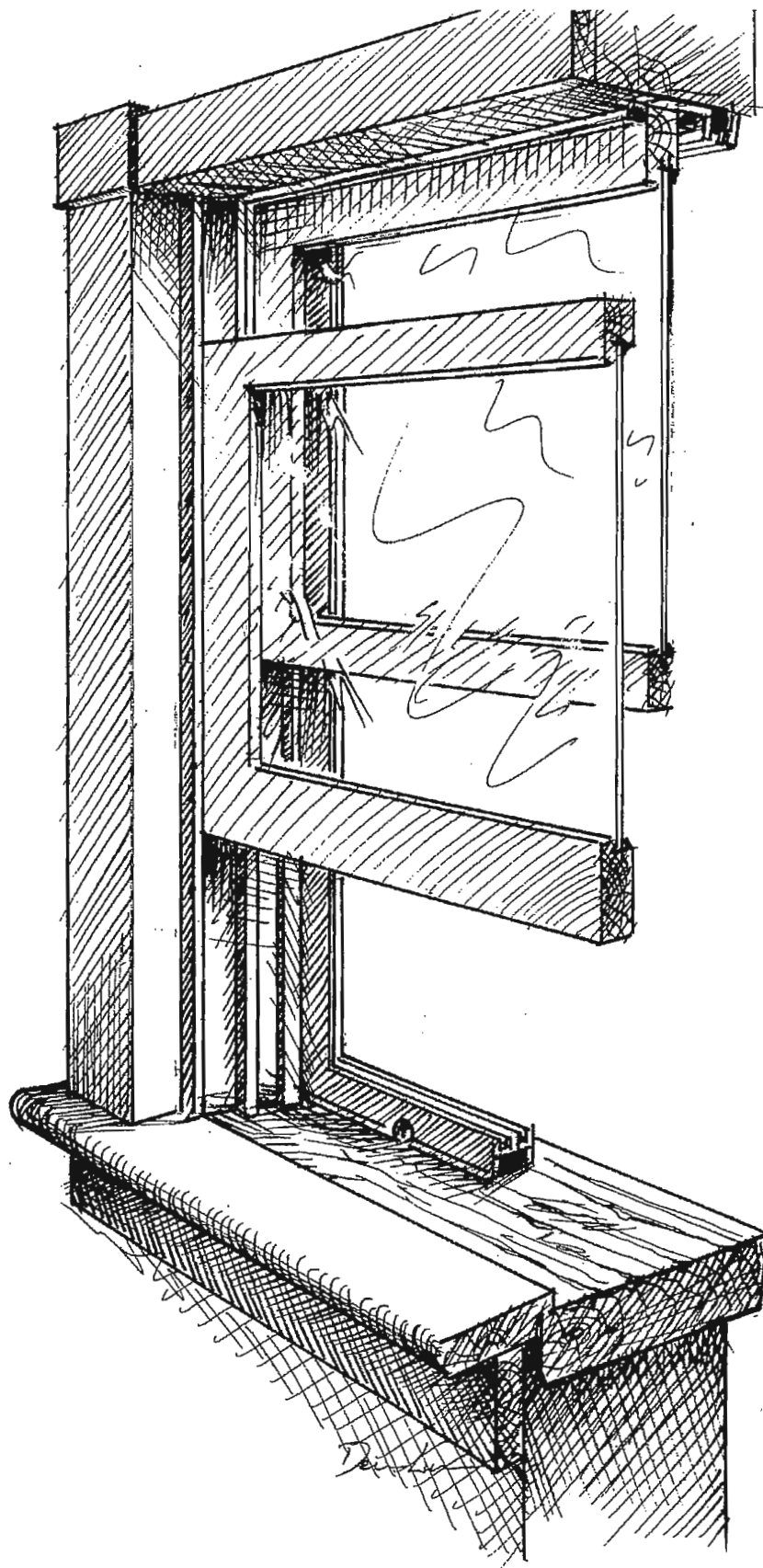
Teacher's Guide to Lead Paint in Historic Buildings



Teacher's Guide to Lead Paint in Historic Buildings



Teacher's Guide to Lead Paint in Historic Buildings



Teacher's Guide to Lead Paint in Historic Buildings

